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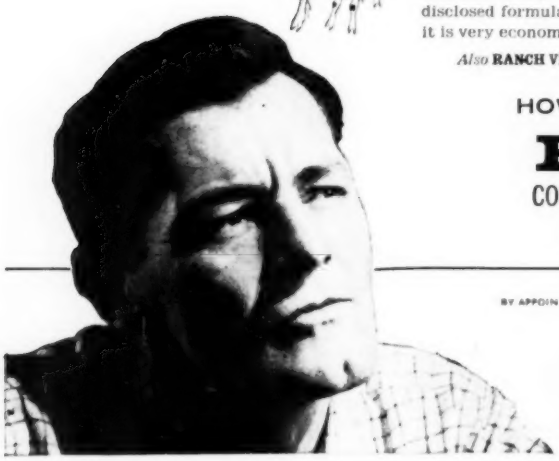

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A Case of Bovine Malignant Catarrh

BY

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Wolverhampton*

and

F. JAGGER
Shrewsbury

SUMMARY.—A case of bovine malignant catarrh, confirmed by histological evidence, is described, and some points of differential diagnosis relative to mucosal disease are discussed.

Introduction

An acute disease of cattle characterised by fever and nasal catarrh has been recognised in Europe for more than a century as bovine malignant catarrhal fever, and in South Africa for many years under the name Snotziekte. Investigation has shown that the two conditions are the same and that the lymphatic and nervous systems are involved as well as the mucosa of the upper respiratory tract (Daubney & Hudson, 1936). The disease appears to have a world-wide distribution, occurring mainly as sporadic cases. However, recurrence each year on certain farms in some countries constitutes an economic problem, and occasionally outbreaks with high mortality lead to serious loss (Hutyra, Marek & Manninger, 1946). In this country clinical cases are encountered sporadically, some of which are reported but their identity, according to the criteria suggested by Daubney (1959), has not been confirmed. Current interest in other mucosal diseases makes such confirmation desirable, particularly for differential diagnosis. To this end the following case is recorded.

History

A self-contained herd of pedigree Ayrshire comprising about 200 cows and heifers, was grazing on an extensive pasture. In the first few days of 1959 (June) a heifer was seen to be ill and was brought in to a loose-box. Signs of disease were fever, and profuse nasal discharge. Treatment with a variety of antibiotics had no effect and the animal died after 4 days' illness. The box was then cleaned out but not thoroughly disinfected, and left vacant for about 10 days when the subject of the present case was brought in from the field in preparation for showing. A week later she became ill and advice was sought.

Case Report

Subject

A 5-year-old cow in excellent condition, 5 months pregnant, not milking.

Examination

The animal was hyperaesthetic, apprehensive with fine muscle tremors. There was a sero-mucous nasal discharge and the nostrils, muzzle, buccal mucosa and vulva were brightly congested. Respirations were accelerated and laboured as a result of nasal obstruction causing "snoring." Photophobia, lachrymation and conjunctival injection were evident. The temperature was 105° F. and the animal was constipated, faeces being dark, balled and mucus-coated.

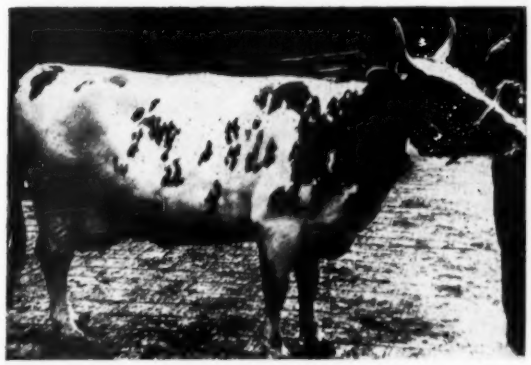

FIG. 1.—3rd day. General view showing excellent condition of subject.

* Now at the Veterinary Investigation Centre, Y Buarth, Aberystwyth.

FIGS. 2 and 3.—3rd day. View of head to show nasal discharge, photophobia and lachrymation.

Treatment

Oxytetracycline, in full dosage, was given intravenously on first, second, third and fourth days and hydrocortisone also on each day after the first.

Course

On the third day (Figs. 1, 2 and 3) the animal was still strong and active, though the temperature had remained elevated (105.3°F.). Buccal and vulval congestion had subsided somewhat, but the nose was now encrusted with exudate. "Snoring" was still pronounced, and there was no objection to opening the mouth for examination since this seemed to afford relief by allowing mouth-breathing. Both eyes had developed an even corneal opacity and the ocular discharge had become somewhat purulent. A puffiness under the jaw appeared to be due to oedema.

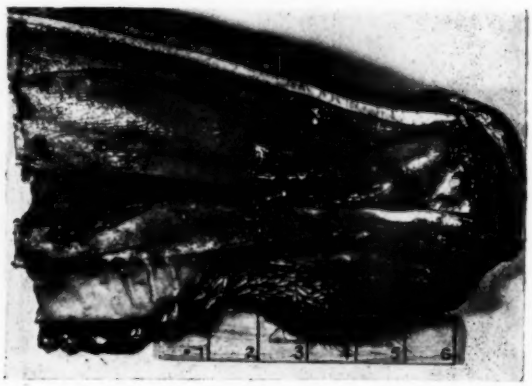

FIG. 4.—Longitudinal section of nose (nasal septum removed) to show mucous obstruction.

A blood sample was taken and gave a normal erythrocyte count (5,000,000 per cu.mm.) but showed a leucopenia (2,700 per cu.mm), polymorphonuclear cells comprising 48 per cent. of the total. 2.5 ml. of this blood was injected intraperitoneally into each of 2 rabbits.

In the ensuing 4 days the only improvement was some lessening of the buccal and vulval congestion, the fever and respiratory distress continuing. On the seventh day slaughter was decided upon, but the animal died in the lorry on the way to the knackery.

Post-mortem Examination

A *post-mortem* examination was carried out about 1 hour after death. Body condition was still good. There was a bilateral corneal opacity with greater density towards the ventral halves. On sectioning the eye the opacity was found to be due to a grey leucocytic deposit on the posterior surface of the cornea. A light mucoid nasal discharge was evident but the mouth appeared normal. The lungs were partially collapsed with areas of emphysema at the bases of the diaphragmatic lobes. The heart appeared normal. The liver was enlarged, very pale and moderately fluke infested. The spleen was enlarged (weight 3¼ lb.) with capsular petechiae. The kidneys had faint grey foci about 0.5 mm. in diameter distributed mainly in the medulla. There were no stomach or intestinal lesions, but the large intestinal contents resembled horse faeces. The 5-month foetus in the uterus appeared normal. All carcase lymph glands were enlarged and soft, with cream-coloured cortical areas. The head glands were congested also with scattered dark haemorrhages. The head sinuses contained several ml. of turbid fluid. The nasal mucosa was more or less intact but deeply congested and the airway over the turbinates was partially blocked by a

H. E. ROBERTS & F. JAGGER—A CASE OF BOVINE MALIGNANT CATARRH

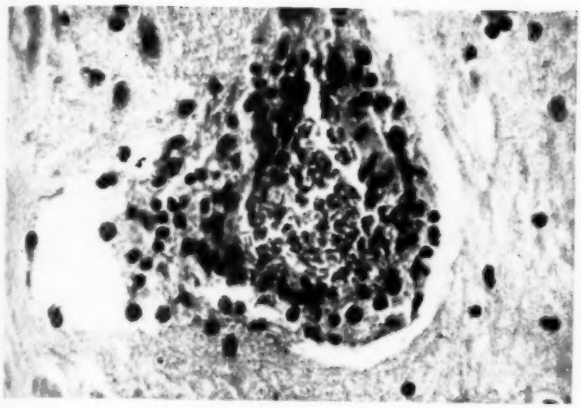

PLATE I.—*Cerebrum.* H.P. Cuffed vessel showing type of cells.

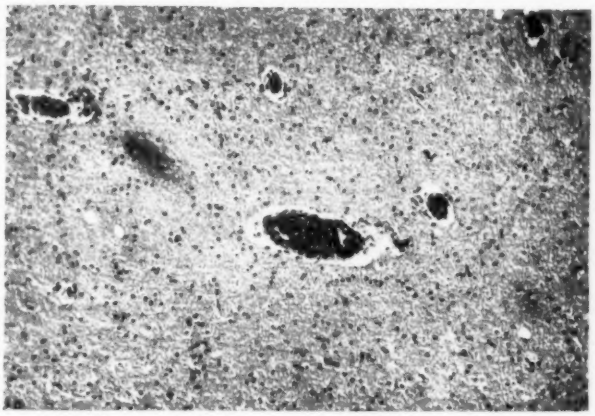

PLATE II.—*Cerebrum.* L.P. General perivascular cuffing.

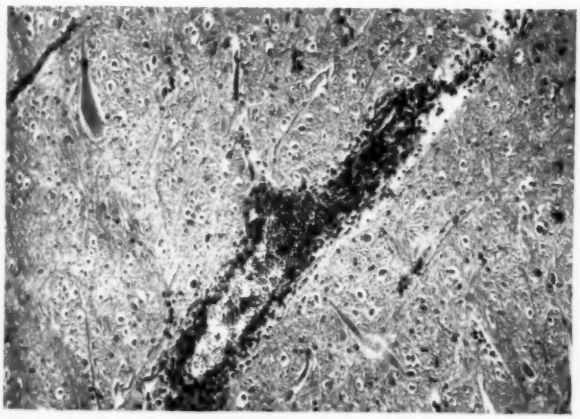

PLATE III.—*Mid-brain.* L.P. General perivascular cuffing.

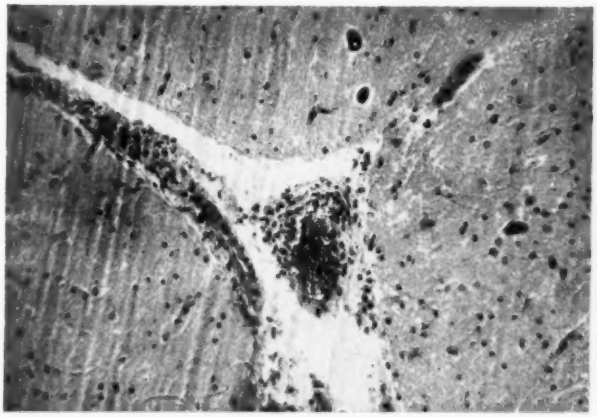

PLATE IV.—*Cerebellar meninges.* L.P. Infiltration and cuffing.

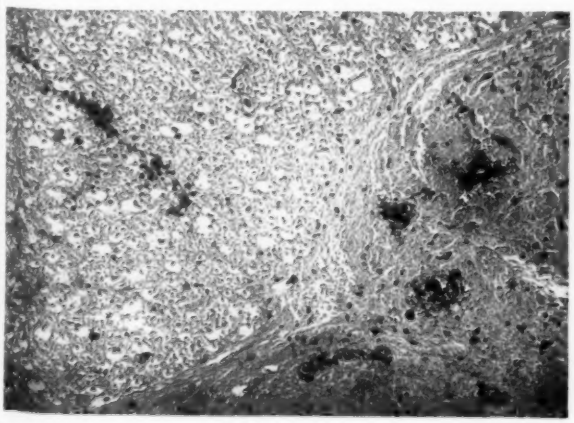

PLATE V.—*Lumbar cord.* L.P. Infiltration and haemorrhages.

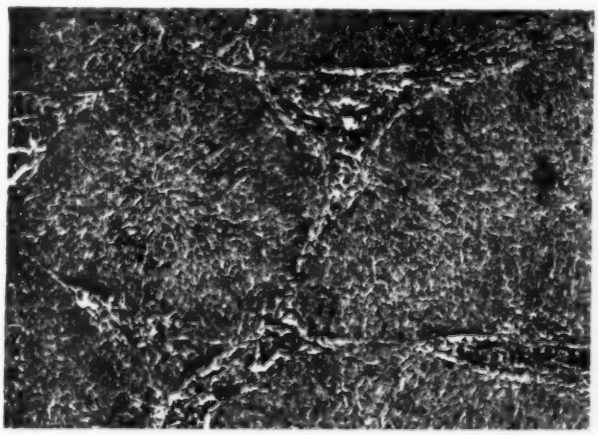

PLATE VI.—*Liver.* L.P. Interlobular infiltration.

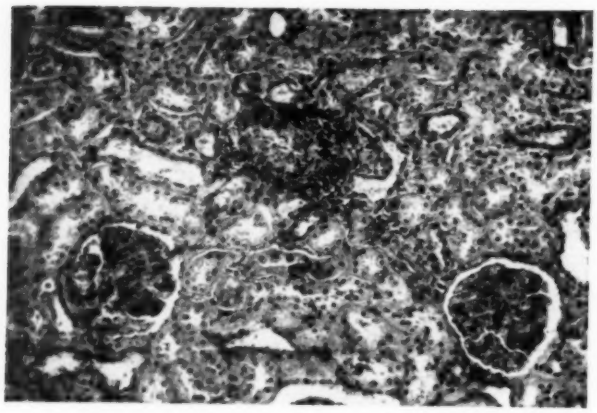

PLATE VII.—*Kidney cortex.* L.P. Focal infiltrations.

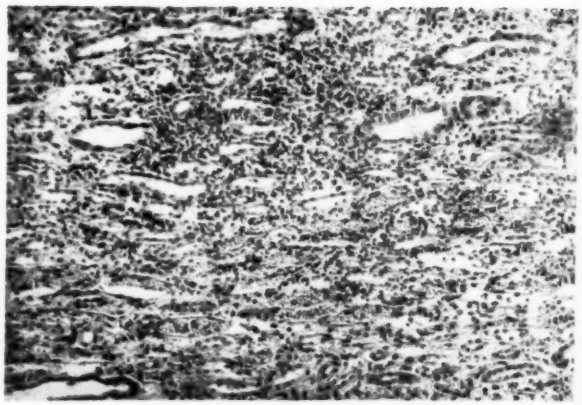

PLATE VIII.—*Kidney medulla.* L.P. Diffuse infiltration.

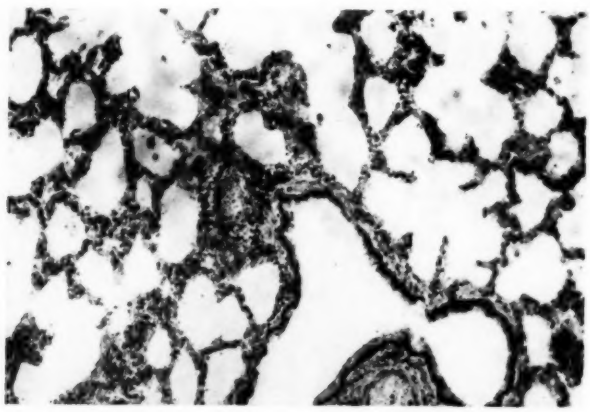

PLATE IX.—*Lung.* L.P. Vascular cuff adjacent bronchiole.

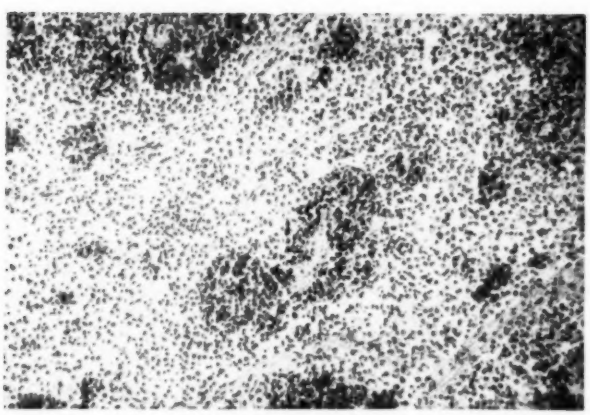

PLATE X.—*Lymph gland.* L.P. Lymphocyte depletion and reticular proliferation.

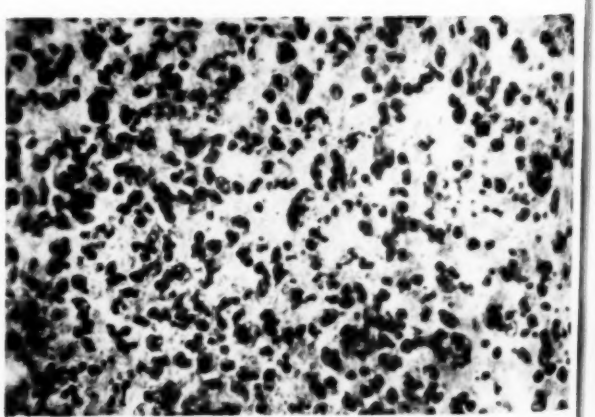

PLATE XI.—*Lymph gland.* H.P. Degenerate nuclei undergoing phagocytosis.

mass of tenacious adherent bloodstained mucus (Fig. 4). The brain had an excess of meningeal fluid.

Bacteriological Examination

Aerobic cultures of brain and organs yielded no significant growths.

Rabbit Inoculation

Emulsions in 0.9 per cent. saline were prepared from (a) brain and lumbar cord (b) liver, kidney, spleen and lung and (c) carcase, lymph glands, and each injected into 2 rabbits. No ill effect was observed in these rabbits (nor in the ones previously inoculated with blood) during 4 months' observation.

Histological Examination

Sections were made of cerebrum, cerebellum, midbrain, medulla and lumbar cord, of liver, lung, kidney and spleen and of carcase lymph glands.

The main histological feature consisted of widespread accumulation of lymphoid cells mainly around small blood vessels. These cells (Plate I) varied in size, the commonest resembling small lymphocytes, while others were like large lymphocytes or macrophages; polymorphonuclear cells were very scanty.

All sections of nervous tissue were affected though cerebrum (Plate II) and mid-brain (Plate III) to a greater degree. In addition small focal accumulations of the lymphoid cells were quite common in both grey and white matter of brain and cord. Meningeal vessels were also cuffed and the meninges, particularly the cerebellar (Plate IV) were quite heavily infiltrated with round cells. The nuclei of the neurones appeared degenerate (chromatolytic) but no inclusion bodies were seen in them. Small haemorrhages were prominent in the grey matter of the cord (Plate V).

In the *liver* (Plate VI) there was marked fatty change and intense lymphoid infiltration of the interlobular tissue especially round the portal tracts. Scattered foci of round cells were also present in the parenchyma.

The *kidney* was severely involved with a widespread intertubular infiltration of lymphoid cells. In the cortex (Plate VII) the distribution tended to be focal but in the medulla (Plate VIII) it was more diffuse and much more intense.

The *lung* (Plate IX) revealed numerous small scattered foci of round cells largely associated with blood vessels. Some bronchioles showed dense asymmetric cuffs of similar cells.

Lymph glands were oedematous and there was a pronounced proliferation of the reticular elements (Plate X) in the medulla at the expense of lymphatic tissue. Degenerate (pyknotic, karyorrhectic) lymphocytes appeared to be undergoing phagocytosis in some areas in this region (Plate XI). The number of small lymphocytes in the cortex was also depleted though lymphopoiesis appeared to be active extensively, leading to poor definition of germinal centres. Eosinophils were quite numerous. The capsule was heavily infiltrated with lymphoid cells. Haemorrhages were evident in the head glands.

In the *spleen* there was proliferation of the reticular elements and general depletion of lymphocytic cells. The red pulp was markedly congested and had a heavy haemosiderin deposit.

Discussion

The first animal was almost certainly affected with malignant catarrh, but it seems unlikely that the infection was contracted by the second animal from the loose-box since the incubation period, of the experimental disease at least, is considered to be not less than 10 days (usually 21 days) and transmission, even by direct contact, extremely rare.

The symptoms and course were typical of the "head and eye" form of the disease, which is the most characteristic, best known and most easily recognised. The leucopenia revealed by the single haemotological examination is in line with observations of Plowright (1953a). The necropsy findings also conform except that widespread haemorrhages have been described by some authors (*e.g.* Daubney & Hudson, 1936). Apart from the characteristic nose and eye changes, chief features were, macroscopically, the lymph gland enlargement, and microscopically, the focal, largely perivascular, accumulations of lymphoid cells strikingly obvious in the soft organs and the brain. These accumulations would appear to be of prime significance in confirmation of diagnosis, being considered by Plowright (1953b) as "characteristic if not pathognomonic of the specific infectious disease" in the pathogenesis of which, following a primary depletion of small lymphocytes in spleen and lymph glands, there is an intense proliferative activity of lymphatogenous elements including the pericytes round the small blood-vessels. No neuronal inclusion bodies such as described by Stenius (1953) were seen.

The failure to transmit infection to rabbits is consistent with the recognised difficulty of artificially infecting both cattle and rabbits. Reported attempts at such transmissions from primary cases indicate irregular results and success only after persistent efforts. Some of the failures may be related to the fragile nature of the infective agent (Piercy, 1953) which is essentially bound to lymphoid cells and therefore not filterable (Piercy, 1952).

Descriptions in previous case reports from this and other countries imply a wider variety of disease characters than might be expected from the activities of a single infectious agent. Where epithelial necrosis and pneumonia have been prominent it seems likely that secondary organisms were concerned. Modern antibiotic therapy would, as perhaps in the present instance, tend to reduce such complications. However, more important probably, has been the confusion with other infectious mucosal diseases which may well be much more common. These diseases have not yet been accurately defined but, on present knowledge, the main points of clinical differentiation from malignant catarrh would be the presence of diarrhoea and frequency of buccal and interdigital erosions in mucosal disease, and the absence of constipation and the severe rhinitis (producing

(*Concluded at the foot of col.* 1, *p.* 852)

Studies on Bracken Poisoning in Cattle

Part VII.—The Toxicity of Bracken Rhizomes

BY

W. C. EVANS, I. ANTICE EVANS,
R. F. E. AXFORD, G. THRELFALL,
D. A. HUMPHREYS and A. J. THOMAS

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School of Agriculture, University College of
North Wales, Bangor

SUMMARY.—Bracken rhizomes if eaten by cattle can cause the disease known as bovine bracken poisoning. The toxic factor is present in the rhizomes in at least 5 times the concentration which normally occurs in the fronds. Stock should be denied access to ploughed bracken-land containing appreciable quantities of exposed rhizomes.

CATTLE bracken poisoning is a cumulative disease, usually caused by the ingestion of a sufficient amount of green bracken fronds. Since the clinical symptoms take about 3 weeks to develop, field cases occur most frequently from June onwards, extending to the autumn. That a similar condition can be brought about through stock eating bracken rhizomes has been suspected for some time (Rowlands, 1961), but not experimentally demonstrated.

In April, 1958, two yearling shorthorn bullocks outwintered on a farm in the Lleyn Peninsula, showed typical symptoms of bracken poisoning. The cattle had access to a large tract of bracken-infested land, ploughed in February of that year. There was a plentiful supply of exposed rhizomes on the ground, and the farmer had seen the animals eating them, but was unaware of any danger. These animals succumbed; haematological and *post-mortem* findings were consistent with this diagnosis (Coulson, Davies & Evans, 1960). Since the bracken fronds were only just emerging above ground at this time of year, the inference was that the condition had been caused by the rhizomes, but there was some doubt about it.

Other fatal field outbreaks of cattle bracken poisoning, occurring under similar circumstances, have since been brought to our notice. Work is in progress at these laboratories on the isolation of the toxic factor(s) from bracken fronds, and in view of the uncertainty about the toxicity of bracken rhizomes, it was decided to test this by direct experiment.

Experimental

Rhizomes, exposed after ploughing bracken-infested land in Anglesey, were gathered in February, 1961. The encumbering soil was washed off with a hose-pipe, and the rhizomes then dried in an oven at 40° to 50° C. before milling to a fine brown powder. This was mixed with bran in the

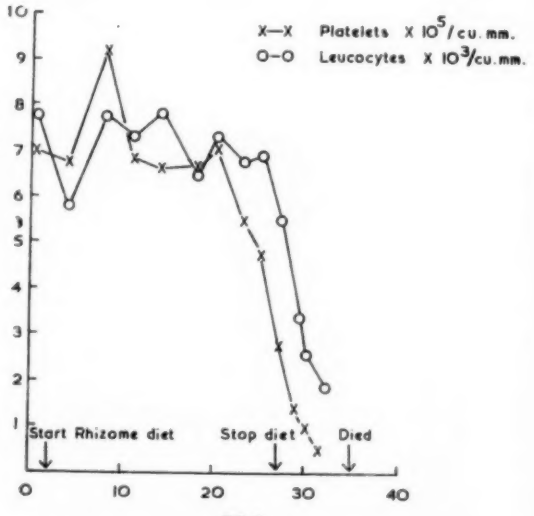

FIG. 1.—Platelets and total leucocyte counts on the blood of the Welsh Black calf during the rhizome toxicity experiment.

A Case of Bovine Malignant Catarrh.—*Concluded.*

rhinostenosis) and evidence of ocular and nervous involvement seen in malignant catarrh. Pathologically, the lymphatic/vascular changes of widespread distribution in malignant catarrh appear to be specific and contrast with the primarily epithelial nature of lesions, largely confined to the alimentary tract, in mucosal diseases.

Acknowledgment. Microphotographs were taken by Mr. Harold Richards.

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The Behaviour of Cattle in Crushes

BY

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SUMMARY.—The cattle crush is a device which can be most useful for the individual handling of large numbers of animals. Designs based on inaccurate, preconceived theories of how cattle behave in crushes lead to attempts at making cattle conform to such theories; and this, in its turn, inevitably leads to inefficiency and resulting brutality. An attempt is made in this paper to record the behaviour patterns which may be observed when cattle are handled in crushes under field conditions. A full study of this subject could possibly further an improvement in the design of the device and thus an increased efficiency in its use, with a consequent more humane handling of the animals. It is hoped that veterinary surgeons in cattle practice will make contributions towards such a study of behaviour.

Introduction

THE restraint of domesticated cattle can sometimes present a difficult task; and this is especially true if the animals are not used to being handled. It is largely for these wilder types of cattle that the device known as the cattle crush has been designed.

Although crushes are much used, and some points of their design appear to have been modified from experience of the way animals react to them, little effort seems to have been made to describe the behaviour patterns which can be observed when cattle are handled with them. An exception is the recent most interesting paper by Tulloh (1961), who has attempted to assess the temperaments of the members of a group of experimental cattle by observing their reactions to a crush. Many veterinary surgeons in cattle practice must have a wealth of experience of the behaviour of animals in crushes. The tentative account given in the present paper is written in the hope that comments will be forthcoming from such practitioners.

A cattle crush is basically a narrow cage, just large enough to contain one cow, with a device for holding the animal's neck in a firm grip. The commoner patterns have a vertical or side action guillotine trap set round a gap in the upper half of the

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Studies on Bracken Poisoning in Cattle.—*Concluded.*

proportion of 2 parts rhizome powder to 1 part of bran, and the mixture wetted by the addition of molasses to diminish its dustiness and increase palatability.

The experimental animal was a 4-month-old bull-calf (Welsh Black cross, weight 200 lb.) fed on a diet of hay and water, *ad lib.*, together with 2 lb. calf nuts per day. During the toxicity trial, 1 lb. of the rhizome-bran-molasses mixture was given in addition, per day.

Haematological data were obtained at least twice weekly, by the methods previously described (Evans, Evans & Hughes, 1954).

The rhizome supplement was commenced on March 2nd, 1961, and terminated on March 27th when the familiar haematological picture of leucopenia and thrombocytopenia became evident. These are illustrated in Fig. 1.

Flecks of blood were noticed in the faeces on March 27th, together with a mucous discharge from the nostrils. These symptoms became progressively worse and the temperature rose irregularly, finally reaching 107° F. On the 29th batyl alcohol (0.5 g. in Tween 80) was given intravenously and penicillin therapy started (Evans, Thomas, Evans & Edwards, 1958). On the 31st this therapy was repeated, and in addition the animal received 1 litre of fresh citrated blood by transfusion, using polythene vessels. The temporary improvement was not maintained, and the animal died on April 4th. *Post-mortem* examination revealed extensive haemorrhages in several organs—intestinal tract, spleen, gall-bladder, heart, lungs and kidneys. These, together with the haematological findings confirm that bracken rhizomes are indeed capable of producing the disease known as cattle bracken poisoning.

It is noteworthy that about ½ lb. of the rhizome powder per day, for 25 days, was a lethal dose; this indicates a toxicity of roughly 5 times that present in a comparable weight of dry fronds (Evans, Evans, Thomas, Watkin & Chamberlain, 1958).

Acknowledgments.—We wish to thank the Agricultural Research Council for financial support. The field outbreaks were brought to our notice by Mr. D. T. Roberts, M.R.C.V.S., Pwllheli, and Messrs. I. M. Wynne and Ceiriog Jones, M'S.R.C.V.S., Llanrwst.

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exit door. This gap may be between the door and the door-jamb (see Fig. 1), or it may be in the door itself. Crushes are usually used with a gathering pen which may, in the more lavish lay-outs, take the form of a funnel which narrows down to a single-file passage (race) leading directly into the entrance of the crush. Sometimes the general term "crush" is used to refer to both the narrow race and the crush proper (cage).

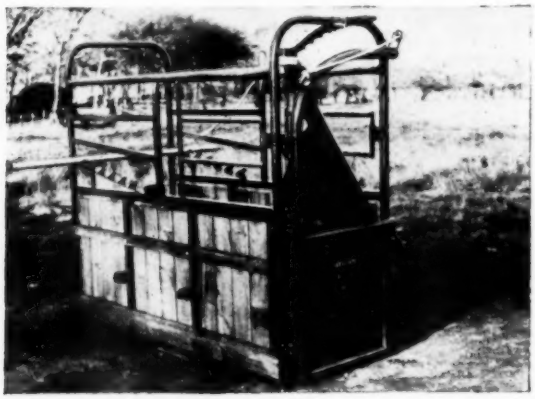

FIG. 1.—Crush with side action, remotely controlled, guillotine trap forming part of exit door. Gap for animal's head is between guillotine and door-jamb. Rear transverse bar is in position.

In theory, a cow is quietly persuaded first to leave the gathering pen and enter the cage, and then to put its head through the gap in the door and allow itself to be caught. Once held in this way it can be safely approached and handled. The animal is released by opening first the trap and then the exit door and allowing it to move forward, out of the cage.

The descriptions and comments made in this communication are based on two years' experience in a veterinary practice where large numbers of animals were handled in many types of crushes, and on periods of watching the use of crushes in cattle markets. Most of the cattle were not used to being restrained, were in strange surroundings and often subject to painful interferences (tuberculin testing, dehorning, etc.). Speed of handling was often important, so there was a tendency to hurry the animals by shouting and striking at them. As a result of these various factors, many of the animals were in what might be termed a state of alarm. Some of the titles given to the behaviour patterns may appear to be subjective. This is deliberate. At times a subjective comment can be very useful in conveying the general nature of a complicated behaviour pattern.

Description of Observed Behaviour Patterns

When alarmed animals are put through a cattle crush, only an occasional one conforms to the theoretical pattern of (1) quiet entry, (2) docile insertion of head into trap, (3) passive holding of head in trap and (4) quiet release. Most cattle will show reluctance to comply in one or more of the stages. To make clear the description of the observed behaviour patterns, it is perhaps best to consider the four stages separately.

Stage 1: Entry into the Cage

A few cattle will enter the cage in the expected way and place their heads through the gap in the exit door; some will enter freely but stand back from the trap; the majority will show marked hesitation in even entering. This is especially noticeable if they can see the trap operator standing by the exit door. Some patterns of crush try to overcome this by having a remotely controlled trap. If the animal in the crush bellows or struggles, which may well happen when an injection is given, there often seems more difficulty in getting the next cow to enter the cage. An attempt can be made to encourage animals to move into the cage by using a building as a collecting yard and siting the crush immediately outside the door—for it is widely held (Ministry of Agriculture, 1957) that the cattle will make for the light in order to escape from a darkened building. It is also suggested (Ministry of Agriculture, 1957) that it is easier to make an animal go where it can see another ahead; hence the crush should be placed so that an animal waiting to enter it can see the animals that have been through it. This "following response" can sometimes be a danger, for, unless stopped in some way, a waiting animal may rush forward and escape when the exit door is opened to release the actual occupant of the cage.

It is not always possible to arrange these aids; and when used, they seem of limited value. In fact, an animal that is holding back is generally stimulated to move into the crush by striking or the use of some other, more or less violent, means. Sometimes the door will be left open at the time the animal is hit. This seems to encourage it to rush forward to escape, and the exit door will then be swung shut in its face. On the shutting of the door, most cattle will halt in their tracks; some will move back; and a few will escape, owing to the mistiming of the closure. Once it is in the crush, a transverse bar should be quickly placed behind the animal to prevent it from backing out. Contact between this bar and the animal's hind quarters often seems to induce a strong backing response.

The patterns of behaviour adopted by the cattle after they have been forced into the cage can be described as follows:—

(a) *Docile patterns.* The animal stands quietly in the cage and may even put its head into the trap.

(b) *Alarmed patterns.* The animal tries to back out of the cage and does not attempt to put its head into the trap. It may put its nose down below the gap in the upper half of the exit door and shake its head from side to side. This type of response can often be observed when trying to capture cattle by grasping their nose. The head shaking has been described by Brownlee (1950) and ascribed to fear of painful interference.

(c) *Greatly alarmed patterns.* The animal struggles, may bellow, shake its head or defecate. Sometimes the head will be lowered, the neck flexed and the nose of the animal pulled in so that the plane of the forehead is at right angles to the ground. This is the

aggressive head-down attitude described by Schein and Fohrman (1955). Some animals attempt to turn round in the cage and occasional small ones will become jammed in a "jack-knife" position.

(d) *Submissive patterns.* The animal stands in the cage with its head lowered and pushed forward in extension. It does not usually attempt to back out. The striking of an animal in this position seems to intensify the condition and make it appear more "stubborn," and will sometimes cause it to adopt the kneeling submissive state as described by Fraser (1957). This latter state has been classified as a transient form of "tonic immobility" (Fraser, 1960), in which the animal is either unwilling or psychologically (as against physiologically) unable to get up.

It is usually the cattle which have been most difficult to get into the crush that adopt the greatly alarmed and submissive patterns.

Stage 2: Insertion of Head into the Trap

Occasionally a cow will enter the cage and without persuasion put its head into the trap. The majority of animals, however, will be standing back from the gap in the upper part of the exit door, and some of these will have their heads down. In an effort to induce the recalcitrant ones into the trap, they are often struck across the hind quarters. A few will respond to this treatment by putting their heads into the trap as desired; the majority will redouble their efforts to back out of the cage; some will adopt the greatly alarmed posture and even attempt to jump forward through the gap in the gate (a move dangerous to both the cattle and their handler); and others will pass into the submissive states.

As the trap works only on an animal with its head in the raised (normal) position, various means are used to encourage cattle with their heads down to lift them. Tapping with sticks is rarely successful, and usually results in alarmed animals struggling more and submissive animals becoming more stubborn and even adopting the kneeling stance. The heads often have to be pulled manually into the trap, to the great discomfort of both the puller and the pulled. Contact between the guillotine and the cow's neck usually seems to set up a strong withdrawal response, and, unless a firm grip has been obtained, the animal may be able to withdraw its neck. When this occurs, it is often extremely difficult to make it replace its head in the trap.

A cow which has to be put through the crush a second time within a fairly short period, which is the case in such procedures as tuberculin testing, may show an increase in its reluctance to enter the crush on the second occasion. The increase seems to be especially marked when the initial interference has been painful. This apparent example of learning would seem to fit in that category of learning processes associated with self preservation in cattle (avoidance of harmful agents) described by Brownlee (1957).

Stage 3: Stance while in the Trap

A few animals stand quietly once they are held in the trap. Most struggle and try to withdraw their heads. Painful stimuli applied to their necks (tuberculin testing) may cause some of them to lunge forward. This form of struggling is most noticeable in animals that have previous painful experiences of the crush.

Stage 4: Release from the Crush

The design of the trap in the door can influence the ease with which cattle can be released. In one pattern of trap, the animal's neck is held in the gap between the side action guillotine and the door-jamb (see Fig. 1). To release the head and neck, the trap is opened and the exit door swung forward, off the stationary animal, which is then free to move out of the crush. The animal does not necessarily have to withdraw its head before the gate can be opened.

Another type of guillotine holds the animal's neck between two parts of the actual door. Here, when the trap is opened, the animal has to withdraw its head before the gate can be swung open. Many will do this of their own accord; a few may try to withdraw the head and neck but meet with mechanical difficulties due to their horns; and others will not even attempt to pull their heads back, but will have to be forced to do so.

When the door is open, most cattle will move swiftly forward out of the crush, but a few will hang back and will have to be persuaded out. Many of those animals whose heads had to be forced back out of the trap tend to be found in this latter group.

The tentative descriptions given above are an attempt to outline the behaviour patterns which may be seen when cattle are handled under field conditions. Many of the interferences are painful, and the cattle appear to come to associate the crush with painful stimuli and react accordingly.

Discussion

The only other description of behaviour in crushes seems to be that of Tulloh. His animals were passed through a crush once a month, in an unhurried manner, were not subject to any painful interference and were allowed to become accustomed to the whole process before any observations were made. Under these conditions the animals would presumably be much easier to handle and may even have learnt to co-operate to some extent. Tulloh's descriptions of what might be termed the "quieter" patterns of behaviour are similar to those in this paper, but his accounts of the "violent" patterns show marked differences. He does not seem to have met head shaking, or cattle with their heads down, or any true submissive state, although he does mention "stubborn animals." These differences are probably to be expected, considering the very different conditions under which the animals were handled.

Most crushes give the impression of having been designed from a preconceived theory as to how cattle should behave. Under practical conditions, the majority of cattle are alarmed by the time they are inside the cage; yet the crush itself may seem to have been constructed to handle only non-alarmed animals. Forceful attempts to make the animals conform usually result in an increase in the alarm response.

Modifications of design in the light of observed patterns of behaviour would appear to be a way of overcoming some of the faults inherent in the use of present patterns of crush. The type of trap in which the neck of the animal is held between the side action guillotine and the door-jamb appears to

be an improvement in design, based on the observed behaviour pattern of an animal showing reluctance or difficulty in removing its head from the trap. Another type of trap which does at least take into consideration the behaviour pattern of a cow showing reluctance to push its head through a gap in the door, is made up of two side panels, which are set back from the exit door and swing inwards to trap the neck of the animal in a vertical slot, closed at the top and bottom (see Fig. 2). The animal's neck does not seem to be held as firmly as in the more orthodox guillotine action trap. If the animal is in any of the "head down" postures, the panels will close above its head and miss it completely. The obvious remedy would seem to be a downward extension of the side panels, to allow for any position of the head. Unfortunately this alteration would also appear to allow even freer head and neck movement.

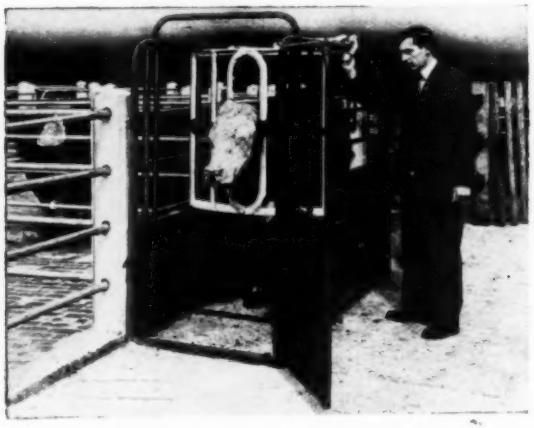

FIG. 2.—Crush with side panel type of trap set back from exit door, which is open. Animal's head is in the raised (normal) position.

A more or less radical alteration in the design of the crush, based on a thorough knowledge of the behaviour of animals in it, might not only make for greater efficiency in the handling but also make conditions more humane for the animals thus handled.

Acknowledgments.—I would like to acknowledge the helpful criticism of Mr. I. R. Barker of Hereford, in whose practice most of the observations were made. Thanks are also due to Dr. J. O. L. King and Mr. A. G. Singleton for their comments and suggestions. Fig. 1 is reproduced by permission of John H. Taylor Ltd., Consett, Co. Durham, and Fig. 2 by permission of Leslie P. Morris Ltd., Craven Arms, Salop.

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Clinical Notes

An Outbreak of Conjunctivitis in a Cattery (caused by *Moraxella lacunatus*)

BY

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Clinical (A. R. W.)

THE outbreak occurred during the period November to January in an enclosed cattery containing 23 adult cats and 30 kittens 4 months of age and over. All the animals were home bred and there had been no admission of other cats to the premises for 15 months.

The cattery consisted of one room with a floor area of approximately 400 square feet and cubic capacity of 3,500 cubic feet. It was divided by wire netting into 6 compartments, 8 feet by 6 feet; 3 on each side of a centre passage. The floor was of concrete but each compartment had a wooden bench and there was free access to an outside run. Ventilation was by means of adjustable windows. The room was kept at a temperature of 60° F. and during the course of the outbreak infra-red lamps were used.

By the end of the outbreak, which lasted about 9 weeks, 90 per cent. of the cats had been affected in varying degrees of severity; at the peak 27 showed lesions. The condition was confined to the eyes. There was no loss of appetite or condition and no rise in temperature. The animals remained lively and did not appear to suffer much discomfort in the affected eyes. The severity of the infection was not related to the age of the cat.

The condition was characterised by a very marked inflammation of the conjunctiva, often with considerable oedema of both conjunctiva and eyelids. There was a marked muco-purulent discharge from the eyes; in a few cases very purulent. There was no sneezing or snuffling or any other clinical signs which would have suggested "Cat Flu."

Treatment

Owing to the lay-out of the premises and the number of animals involved treatment was difficult and it is probable that some animals did not receive regular daily treatment.

In the early stages of the outbreak the eyes were treated with intramammary penicillin and streptomycin* without success. Swabs were taken at this stage and as a result of the bacteriological findings intramammary oxytetracycline† was used and a slow but steady improvement was noted. The time taken for the condition to clear up in individual cats varied from 10 days to a month.

Bacteriological (M. E. D.)

Swabs from 3 cats were examined after the infection had failed to respond to treatment with penicillin. Two strains of staphylococci, an α-haemolytic

* Streptopen, Glaxo Ltd.
† Terramycin, Pfizer Ltd.

streptococcus and a Gram-negative cocco-bacillus were isolated from all 3 swabs. The staphylococci were sensitive to penicillin, streptomycin and the tetracyclines, and the streptococcus to penicillin and chloramphenicol, while the Gram-negative cocco-bacillus was sensitive to streptomycin, chloramphenicol and the tetracyclines, but resistant to penicillin.

The Gram-negative cocco-bacillus was found to require the presence of either whole blood or serum, no growth occurring in nutrient, glucose, bile salt, and Koser's broth or in gelatin. Visible growth appeared after 48 hours of incubation in serum and blood medium at 37° C., but no growth occurred at room temperature nor in anaerobic culture. Cultures kept at room temperature lost viability in 24 to 48 hours.

On blood-agar plates the colonies were circular, transparent and pin-point in size, with a glistening surface, and were firmly adherent to the medium. They produced a narrow zone of β-haemolysis.

On Loeffler's serum medium the cocco-bacillus grew well after 48 hours, but without producing either pitting of the surface ("lacunae") (Topley & Wilson, 1946) or liquefaction of the medium. None of the common carbohydrates was fermented.

Six days later, swabs from 7 cats were examined. Of these, 2 were mild cases, and 5 severe, and all had been treated with oxytetracycline for 3 days.

All cultures from the mild cases were bacteriologically sterile, but a Gram-negative cocco-bacillus was isolated in pure culture from the 5 advanced cases. This organism showed characters similar to those of the cocco-bacillus isolated from earlier swabs. It was also seen in direct smears from 3 of the 5 swabs.

Thirty-one days later when clinical signs of the infection were no longer apparent, swabs were taken from the eyes of 12 cats. No Gram-negative cocco-bacilli were isolated, nor seen in direct smears.

The morphological and cultural characteristics of the Gram-negative cocco-bacillus placed it in the genus *Moraxella*. According to the Classification of Bergey (1957) and Topley and Wilson (1946), the inability of this organism to grow in synthetic medium, alone or supplemented with carbohydrate, or in nutrient medium, separated it from the species *duplex* and *lwoffi*, while its inability to liquefy gelatin excluded it from the species *liquefaciens* and *bovis*. The essential rôle of animal protein for its growth, suggested it to belong to the human species *lacunatus* although it had not shown the formation of lacunae on the available batch of Loeffler's serum medium. It may, on the other hand, have resembled the non-liquefying variant described by Audureau (1940).

Discussion

Whilst *Moraxella lacunatus* has been reported on numerous occasions as the cause of conjunctivitis in man (Jordan & Burrows, 1946; Fedukowicz & Horwich, 1953) its occurrence in animals does not appear to have been recorded frequently. A kerato-conjunctivitis in cattle due to *Moraxella bovis* (haemophilus) has been described by Watt (1951) and Formston (1954) and *Moraxella* species have been isolated from the pig, cow, dog and mouse by Rampon (1960). Search of the literature has so far failed to show any record of *Moraxella* in the cat.

Although the organism isolated in this outbreak resembled *Moraxella lacunatus*, the source of the infection is not definitely known. However, about 2 weeks prior to the onset, a member of the staff had been affected with conjunctivitis, and it is possible that this was the mode of entry of the organism into the cattery.

Acknowledgment.—The authors wish to express their thanks to Dr. E. W. Moodie, Department of Veterinary Hygiene and Preventive Medicine, for drawing attention to this outbreak and supplying valuable information.

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Field Trials with Glycerolised Bull Semen

BY

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SUMMARY.—1. *The use of low levels of glycerol incorporated in normal semen diluent produced an increased conception rate on 1st day service during a small-scale trial.*

2. *A more extensive trial of the glycerolated semen to determine its keeping qualities over a 2-day period was then carried out. The drop in conception rate was 2.2 per cent. compared with 4.6 per cent. using the non-glycerolated diluent.*

Introduction

THE effects of incorporating glycerol with seminal samples were brought into prominence by Polge, Smith and Parkes (1949) as a result of their work on the low temperature resistance of fowl semen treated with glycerol. These observations were soon extended to the semen of other animals including the bull (Smith & Polge, 1950). Large numbers of cattle have now been successfully inseminated using semen treated with glycerol and stored for very prolonged periods at −79° C. In recent years attention has been drawn to the use of glycerol in liquid semen. Amquist (1959) reported results with semen in skim milk diluent incorporating 10 per cent. glycerol. These showed an increase in fertility of 3 per cent. on the first day, 5 per cent.

on the second, 8 per cent. on the third and 11 per cent. on the fourth day when compared with skim milk diluent containing no glycerol. In contrast to this, O'Connor and Smith (1959) have reported negative results using a semen diluent containing glycerol.

There are also reports that lower levels of glycerol give better results. Using these lower levels it is possible to add the semen direct to the total volume of glycerolated buffer with less chance of harmful effects. In view of this it was decided to compare the percentage conception rate (% C.R.) using semen in milk egg yolk diluent and the same diluent containing glycerol at a low level.

Method

Trials were conducted with the following diluent: 10 per cent. egg yolk, 3 per cent. glycerol, 87 per cent. treated skim milk.

Split samples containing this diluent, as compared with the same diluent containing no glycerol, gave the following results:—

	Milk Egg Yolk + Glycerol			*Milk Egg Yolk*		
	Cows	Returns	% C.R.	Cows	Returns	% C.R.
1st Day	2,042	496	75.8	2,122	580	72.7

This difference in conception rate of 3.1 per cent. suggested that there might be beneficial effects from the inclusion of 3 per cent. glycerol in bull's semen, and accordingly a further trial was made using semen over 2 consecutive days.

	Milk Egg Yolk + Glycerol			*Milk Egg Yolk*		
	Cows	Returns	% C.R.	Cows	Returns	% C.R.
1st Day	316	75	75.9	322	90	72.1
2nd Day	182	46	74.8	193	62	67.9

Although these numbers are small, the results agree with the first trial. In view of this an extensive trial was carried out, using milk egg yolk glycerol diluent to determine its keeping qualities when used over a 2-day period.

	Cows	Returns	% C.R.
1st Day	6,513	1,555	76.1
2nd Day	3,370	881	73.9

Prior to November, 1959, this centre was using egg yolk citrate diluent. Comparable figures showed a drop in conception rate from the 1st to the 2nd day of 4.6 per cent. Using milk egg yolk glycerol diluent this figure has been reduced to 2.2 per cent. with overall figures showing an improvement by 4.7 per cent. on the 1st day and 7.1 per cent. on the 2nd day.

Milk egg yolk diluent containing 3 per cent. glycerol has been used as routine since November, 1959. Results showing the 3 months conception rate are as follows:—

Cows	Returns	% C.R.
106,745	26,343	75.3

Preparation of the Milk Egg Yolk Glycerol Diluent

1. Heat the skim milk to 96° C., and hold at this temperature for 10 minutes.
2. Cool the heated milk to room temperature.

The diluent is then made up by mixing:—

10 parts fresh egg yolk.
3 parts pure glycerol.
87 parts treated skim milk.

To this is added 500 microgrammes of streptomycin (calcium chloride salt) per ml. of diluent. Fresh skim milk is obtained locally from the milk depot. This is collected in the morning and treated for use over a 2-day period. The diluent for use on the second day is stored in the refrigerator overnight.

Semen is collected from the bulls during the evening and despatched to the sub-centres for use during the following day. Collections are taken 6 days per week.

The semen is diluted at 30° C. and allowed to cool in bulk on the laboratory bench. Dilution ranges from 1:30 to 1:100 according to the quality of the semen and its requirements.

Discussion

The improved conception rate since the introduction of glycerol in bull semen has considerably reduced the number of repeat services. At present 3- and 4-day-old semen is being used to supplement deep freeze storage for the nominated service. This is coupled with collections from the more popular bulls on a 2-day per week schedule, *e.g.* Sunday and Wednesday or Monday and Friday, making certain bulls available on each day of the week. If properly regulated frequent service does not affect either the function of the bulls' reproductive system or the fertility of his sperm. American sources have suggested that frequent collections stimulate more sperm production. One bull in the stud at Desertcreat has been used 2 or 3 days per week during the past year, and shows a 3-month conception rate of 76.7 per cent. for 5,701 cows. Very considerable reductions in bull requirements can be implemented with this more frequent use.

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CHAROLLAIS-CROSS TRIALS PROPOSED

The controversy over whether Charollais bulls from France will improve Britain's beef supplies may be settled by comparative trials with our native breeds. Proposals for such trials have been put forward.

Thirty bulls are to be selected for crossing with British dairy breeds, and it is hoped that the progeny will contribute substantially to the country's meat supplies. It is not proposed to introduce the Charollais as a separate breed at present.

The Charollais Cattle Group, a sub-committee of the Agricultural Improvement Council, under Prof. H. G. Sanders, has put plans for comparative tests to interested organisations including the universities, agricultural colleges, and experimental farms.

Current Literature

BOOK REVIEWS

Regeneration and Entzündung von Standpunktder vergleichenden Pathologie. By C. MESSOW. M. & H. Schaper, Hanover (1960). Translated title: Regeneration and inflammation in relation to comparative pathology.

This doctorate thesis is in 4 parts: (a) introduction (22 pages, 209 references) deals with lining tissue and its reactions in general terms and in disease processes where a defence mechanism operates, (b) regeneration and its comparative pathology (56 pages, about 480 references) is considered in its different forms and tissues. The external (temperature, nutrition, light, water, oxygen, and type of injury) and internal (vulnerability, eye, nervous, and endocrine system)—factors which influence this process are considered in broad terms; (c) inflammation and its comparative pathology (58 pages, approximately 600 references) concerns the definition of inflammation and the separation of the other reparative processes, and the phylogenesis of inflammation (from sponges, through insects and fishes to mammals). Referring to mammals, in particular, Messow describes nonspecific inflammatory processes of various body tissues, emphasising the times and stages at which particular features (sera fluid, fibrin, granulocytes) may be observed; he then considers wound healing. A special section concerns tuberculosis inflammation; (d) experimental section (31 pages. 160 references) describes the detailed tissue reaction following infection intraperitoneally of tail into animal species: pig, sheep, dog, rat, mouse, and guinea-pig. The animals were killed on the 2nd, 4th, 7th, and 14th days, and the appearance of the talcum granuloma is described. This is typical granulation tissue.

The work is primarily a description of varying biological process, and is very readable: the author, quite apart from his fundamental thinking, has been thorough in his survey of the literature as far as the German language is concerned (90 per cent. of references are German). The book may safely be recommended for general reading by biologists and veterinarians, especially histo-pathologists; and is essential reading for those interested in fundamental aspects of comparative pathology.

Staining Procedures: used by The Biological Stain Commission. Second edition, revised by H. J. Conn, Mary A. Darrow, and Victor M. Emmel. Baillière, Tindall & Cox, Ltd., London (1960) and The Williams and Wilkins Co., Baltimore. 40s.

For those laboratory workers who are not familiar with "Conn and Darrow," this collection of staining methods is a "must"; for those who are, it will be a pleasure to see a new edition in this compact form. The earlier "edition," which was published as a series of 9 leaflets between 1943 and 1955, was an attempt to collect and to standardise—within limits—staining formulae and methods as used by members of the Biological Stain Commission. The latter was organised in the U.S. to secure uniformity and the high quality of dyes used in biological work.

This is a laboratory handbook, and this fact has obviously been given primary consideration in the typography, layout, and arrangements of contents: each "recipe" has clear headings—"Designed to show," "Fixation," Embedded in," "Preparation of staining solutions," "Staining schedules," "Results," the text is appropriately crisp, concise, and comprehensive.

There are 3 main sections: "Animal Histology," "Plant Histology," and "Microbiology"; each of these is subdivided and clearly indexed. Fixation, general methods, techniques, are most adequately covered and are presented in a form which will help the novice to obtain good results. References to both the original descriptions and to the recent uses and modifications of methods are given.

All in all, this is the best laboratory handbook of staining methods which has yet appeared; and no laboratory which makes any use of stained specimens should be without it.

Farm Animals—Their growth, breeding and inheritance. By John Hammond. Edward Arnold (Publishers), Ltd., London. (3rd edition, 1960). 28s.

The names of Hammond and farm animals have been linked for so many years, both nationally and internationally, that is a pleasure to welcome a new edition of this well-known book. Twenty years have elapsed since its first appearance, and during that time the original—or second edition—has been at the elbow of innumerable students; so a further edition was both desirable and justified.

The book was originally based on two series of lectures designed to inform the student and the animal breeder of the results of recent scientific research, and its practical application to livestock production. The third edition is very similar to previous editions, but has been considerably extended to incorporate new information. Although this has been generally done effectively, the book would have gained from further editing and more extensive alterations of the original text.

The subjects divide themselves, naturally, into two parts, which correspond to the original lectures. Part 1 deals with fertility and growth in the major farm animals and poultry. The six chapters cover the fundamentals excellently; but in the practical applications, a more critical approach would have been better—particularly in the part dealing with the fertility of cattle. Here, little attempt is made to distinguish between the important and the unimportant, to the extent that the inexperienced reader could be misled.

The second part deals with genetics and breeding, and within the original framework it has successfully incorporated the results of more recent investigations and observations. Reference is made to such diverse topics as dwarfism in Herefords, dropsical calves in Ayrshires, sire performance testing, contemporary comparisons, blood grouping, and heat

tolerance, stress still being laid on the importance of environmental factors in relation to production.

For those for whom the book was written, there is a remarkable amount of information presented in a stimulating fashion, and, for that reason, the book has a unique value. The more specialist reader will be critical, but will appreciate its merit as an introduction to the subjects included; and will find that it contains a comprehensive list of references at the end of each chapter.

Vibrio fetus **Infection of Cattle**—Edited by J. A. Laing, Food and Agriculture Organisation of the United Nations, Rome. (Revised Edition 1960). 5s.

In several countries in Western Europe *Vibrio fetus* infection is under control, but since this is not synonymous with eradication, there is still need to study vibriosis of cattle. This is even more true of less fortunate countries, where the infection is not under control or where it has not been diagnosed so far. This revised edition of the Food and Agriculture Organisation publication, edited by Professor J. A. Laing, is, therefore, most welcome. Also, its authority cannot be questioned, as it represents the views of an international panel of experts.

Much of this second edition is unchanged, especially the parts on diagnostic techniques and the preparation of media, but other parts have undergone considerable alteration to incorporate the results of recent research and observations. The most significant change has been the division of the catalase positive vibrios into two types, namely *V. fetus* (*veneralis*), which produces no H_2S in semi-fluid Martin broth containing cystine and *V. fetus* (*intestinalis*), which does produce H_2S under these conditions. The former is the natural pathogen of the bovine prepuce and genital tract causing infertility and an occasional abortion; and the latter, which has as its natural habitat the intestine of cattle, sheep, and pigs, sometimes causing abortion in cattle and sheep.

The distinction between the two types of *V. fetus* is made throughout the book and in the sections dealing with treatment and control, *V. fetus* (*intestinalis*) infection is almost dismissed as being of no importance. Since our knowledge of the subject is incomplete, and as the distinguishing tests are rather delicate, a recommendation to deal with both types of *V. fetus*—in the same way—might have been both wiser and safer.

Despite the lack of full understanding of vibrio infections, there is sufficient information available to deal with the disease in cattle; and methods of diagnosis and control are fully described. Perhaps a more critical approach would have presented a clearer picture, but, since the book is based on the work of a committee, some degree of compromise between the views of members was inevitable.

Professor Laing has produced a more than useful guide to the subject, and for the specialist he has provided a very full list of references, which will facilitate more detailed study of *V. fetus* infection of cattle.

Valiant Crusade—The History of the R.S.P.C.A. By A. W. Moss. Cassell & Co. Ltd., London (1961). 30s. Pp. 231.

In 1928, the R.S.P.C.A. celebrated 100 years of service to animal welfare. In this year, "A Century of Work for Animals" was published. The present work retells the events which led up to the founding of the society and its work until 1928, and continues the account to bring the record up to date.

The present book is a personal effort by the late chief secretary, who spent his working life in the service of the society; it reflects, in many respects, his own personal views on certain topics—some of which may not necessarily have the unreserved support of the Society's Council or the majority of the members.

This would appear to be so in the case of fox hunting and vivisection, upon which the author gives the impression that his views are rather more "anti" than the declared policy of the R.S.P.C.A. However, the author makes it clear that the views expressed are not necessarily those of the society.

There is much in this book which will interest the veterinary reader. Many members of the profession may not be aware that the R.S.P.C.A. was largely instrumental in securing the passage of the Veterinary Surgeons Act of 1881. He quotes from THE VETERINARY RECORD: "It has never been made clear whether the cost incurred in getting an Act on the Statute Book was paid for out of his (Fleming's) pocket or financed by the R.S.P.C.A." That the society was of material help is shown by a letter from the secretary of the R.C.V.S. to the R.S.P.C.A., which states: "I am desired by the President and Council of the Royal College of Veterinary Surgeons to ask you to convey to your noble President and honourable Society their deep sense of gratitude for the inestimable boon you have so largely aided in obtaining for humanity, the public, and the veterinary profession. It has ordered that their special, and best thanks be tendered to yourself for your great exertions. . ."

One of the first publications issued by the society was entitled "The Obligation and Extent of Humanity to Brutes," written by Wm. Youatt, M.R.C.V.S. who was appointed honorary veterinary surgeon to the society in 1835, and, by offering to treat sick animals of the poor free of charge, when sent to him from the society "with a card" he initiated the "voucher system" which is now embodied in the B.V.A./R.S.P.C.A. agreement.

It is interesting to note that a minority report, issued by the Royal Commission on Vivisection of 1906-1912, contained a recommendation: that veterinary surgeons should be appointed as inspectors under the Cruelty to Animals Act (Vivisection Act) in accordance with the representations of the R.S.P.C.A. That this recommendation did not find official support is well known, but neither, to any extent, did the recommendations of the majority report.

Also of interest is the fact that the R.S.P.C.A. were active in securing improvements to roads which

(*Concluded at the foot of col. 1, p. 861*)

News and Comment

CONGRESS TELEPHONE NUMBERS

Members may like to take note of the following telephone numbers, which cover a number of the places where delegates are most likely to be found if they are wanted by their practices or by other colleagues:—

Wadham College, Oxford 42564; Worcester College, Oxford 47251; Christchurch, Oxford 42201; St. Edmund Hall, Oxford 43574; Rhodes House, Oxford 57130 and 57692; The Randolph Hotel, Oxford 47481; The Mitre Hotel, Oxford 41291; The Royal Oxford, Oxford 48432; Eastgate Hotel, Oxford 42694; Isis Hotel, Oxford 48894, Melville Hotel, Oxford 43336; Linton Lodge, Oxford 597191; King's Arms, Oxford 42369.

ODIHAM AND OXFORD

The Registrar of the Royal College of Veterinary Surgeons, Mr. W. G. R. Oates, in apologising for his unavoidable absence from the Congress—as he has to be with his wife and family on Mrs. Oates's recuperation from her recent major operation—has suggested that the following note might be of interest to those members of the profession who will be attending the Oxford Congress. He writes:—

Those veterinary surgeons who are interested in the foundation and early history of the profession may care to turn their steps towards Corpus Christi college, which lies between Christchurch and Merton colleges, in Merton Street. On entering the main quadrangle of the college from Merton Street there will be found on the left, a passage, from which, also on the left, leads the dining hall of the college. Here, at the far end and looking down from aloft on the High Table, is a portrait of a former Fellow, the Reverend Thomas Burgess, of Odiham, who subsequently became Bishop of St. David's and thereafter Bishop of Salisbury. This portrait should be regarded at least with interest if not with reverence; for it was this man, the son of an Odiham tradesman, who appears to have been largely responsible for the foundation of veterinary education in this country.

An article on Thomas Burgess, written by Professor L. P. Pugh was published in THE VETERINARY RECORD on April 19th, 1958.—EDITOR.

UFAW SYMPOSIUM ON THE ASSESSMENT OF PAIN IN MAN AND ANIMALS

This symposium was held at the Middlesex Hospital Medical School on July 26th to 28th, 1961. There were some 45 contributors and participants.

The President, Sir Russell Brain, delivered an opening address in which he dealt with the anatomical, physiological and psychological aspects of pain. He pointed out that other people's pains are an inference from their words, and to a lesser extent from their behaviour. The pain of animals, since they cannot tell us about it, is an even more remote inference. Nevertheless he thought that because emotions are surely diencephalic in their neurological location and "since the diencephalon is well developed in animals and birds, I at least cannot doubt that the interests and activities of animals are correlated with awareness and feelings in the same way as my own, and which may be, for aught I know, just as vivid."

The final day dealt with the assessment of pain in animals and methods of minimising of suffering in animals used in research. Professor C. A. Keele took the chair at both these sessions. Dr. D. D. Bonnycastle (Jersey City) in opening the morning session, discussed the use of animals in the assessment of analgesic drug action, and emphasised the need for the use of small doses of drugs and for the careful handling of experimental animals. Dr. R. L. Kitchell (Minnesota) described his work on the recording of electroencephalographic and reflex activities evoked by noxious stimuli in electrically stunned animals. Dr. H. O. J. Collier (London) gave an account of his multiple toe-pinch test for assessment of analgesic drugs in guinea-pigs and rats. Dr. C. Radouco-Thomas (Géneva) described his method, partly by means of a film, for electrical stimulation of dental pain in rabbits coupled with a technique for perfusing the roots of the incisor teeth. Dr. K. Soehring (Hamburg) gave a paper on the methods for testing local anaesthetic drugs, and Dr. J. Jacob (Paris) discussed the responses of mice in the hot plate method for testing analgesics.

The main point arising from the discussion was that, as in man, sensitivity to noxious stimuli in animals is influenced by environmental factors. In experimental studies on analgesic drugs stress should be avoided by careful handling of the animals, by allowing freedom of movement, and by the use of small stimuli and small doses of drugs.

In the last session, Professor Alexander Haddow, F.R.S., was to have spoken on the prevention of pain in experiments on animals but he was unavoidably absent and his place was taken by Dr. E. J. Delorme who described several practical devices used at the

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Book Reviews.—*Concluded.*

—in earlier days—were best described as pot-holed mud tracks, and which were a source of suffering to horses. In order to prevent slipping, the General Omnibus Company sanded the roads during frosty weather, but were prosecuted for so doing by vestries (local authorities). This conviction led the R.S.P.C.A. to persuade the vestries to do the job themselves: to everybody's satisfaction no doubt!

In dealing with ritual slaughter, it is surprising that Mr. Moss has failed to mention that, in 1928, the Imam of the Woking Mosque issued a directive to Muslims, in Britain, to the effect that pre-slaughter stunning by means of the humane killer did not—"in any way"—contravene "the teachings of the Koran" or the "injunctions of the Prophet"; a view which has more recently been confirmed by the present Imam.

The book can be recommended to all readers, particularly veterinarians, who are interested in animal welfare.

Chester Beatty Research Institute to prevent discomfort in rats and other animals. Major C. W. Hume pointed out that experiments ought to be done only by persons who have the requisite scientific training and who can be relied on to avoid a wasteful infliction of discomfort. In order to prevent experimentation by the incompetent, it is necessary to have statutory powers such as exist in Great Britain, Sweden, Belgium, Denmark and a number of other countries, but the co-operation of humane scientists is indispensable to work such a system. The British system may look preposterous on paper but it works well in practice. Where a humane tradition has been built up, a callous experimenter will be restrained by the opinion of his colleagues, and it is important that beginners in research should be taught a sense of responsibility towards all the animals which they use. The training of technicians is an important factor in the humane treatment of laboratory animals Major Hume added.

The proceedings of this symposium will be published by UFAW in book form.

THE JOINT MEASUREMENT SCHEME

The following 2 objections under the rules of the Joint Measurement Scheme have been dealt with recently:—

At the Castle Douglas Show, the jumping pony "Shragh," owned by Mr. A. Torbet, of White Crook Farm, Dunagit, Stranraer, Wigtownshire. Objection upheld. Pony not eligible to compete in classes not exceeding 14.2 hh.

At the Fylde Horse Club Show, the Show Pony "Llwyd Siriel," owned by Mr. W. Brown of 447 Bolton Road, Ewood, Blackburn, Lancashire. Objection upheld. Pony not eligible to compete in classes not exceeding 12.2 hh.

LIST OF DISEASES OF ANIMALS

We are advised by the secretary-treasurer of the World Veterinary Association that the publication of the List of Diseases of Animals is held up for the time being as the number of subscriptions received is still too low. Orders received have been noted, and in case the List will be published later, subscribers will be notified.

THE NINTH I.V.S.U. CONGRESS

The ninth congress of the International Veterinary Students Union was held at Alfort, near Paris, from July 20th to 30th, 1961, and was organised by students of the Ecole Nationale Veterinaire d'Alfort. The congress was attended by over 60 delegates from 16 countries, and Great Britain and Ireland were represented by 11 delegates and observers.

The congress was opened under the patronage of the French Minister of Agriculture and had veterinary education as its theme. A report will be submitted to the FAO Panel of Experts on veterinary education.

During the congress, Greece, Poland and Sudan were provisionally admitted to membership. A report on the success of student exchanges between countries was welcomed, and for the first time, Britain has been able to play a full part in these exchanges thanks to the co-operation of a number of British practitioners who have taken foreign students to see practice.

M. Philippe Stoeckel of Alfort was elected President for the year 1961-62, and before handing over the office, the retiring President, Mr. Michael Gordon of London, was able to pay tribute to the organisation and hospitality of the French students.

A NEW GOVERNMENT DEPARTMENT

A new Department of Government has been set up to deal with technical aid to overseas territories. It will take over the work at present done in this field in the Foreign Office, the Commonwealth Relations Office and the Colonial Office, together with the staff now engaged on this work. Among these the advisory services formerly in the Colonial Office Research Department have been transferred to the new Department as from July 24th, 1961.

Semi-official correspondence intended for Advisers should be addressed to them at the above address, or at Sanctuary Buildings, Great Smith Street.

The Advisers on Agriculture, Agricultural Research, Forestry, Animal Health, and Fisheries will work in Sanctuary Buildings, Great Smith Street, London, S.W.1 (using the Carlton House telephone number) because of shortage of accommodation in Carlton House Terrace.

Matters formerly dealt with by the Advisers in the Research Department of the Colonial Office will now be dealt with under the Department of Technical Co-operation, including C. D. & W. Research Schemes.

Official communications to the Department of Technical Co-operation should be addressed to The Director-General, at Carlton House Terrace (Cables, *Ministrant, London*).

COL. SIR ARTHUR OLVER

Sir Frank Ware writes:—

With the passing of Sir Arthur Olver the profession has lost one of its outstanding workers and the obituary notice, which appeared in last week's VETERINARY RECORD, does far less than justice to his great achievements.

Of his work in the Army I am not competent to write, except to note that for it he was decorated with the C.B. and C.M.G., but it was not until he joined the civil side that his qualifications were given full scope to develop.

From reading the obituary notice one might imagine that he held the post of Animal Husbandry Expert to the Government of India as a sort of part-time job, in addition to his military duties, but this was far from being the case.

The facts are that as a result of a recommendation of the Royal Commission, which investigated the requirements of agriculture in India, there was set up the Indian Council of Agricultural Research, consisting of a chairman, secretary, and 2 expert advisers, known as the Agricultural Commissioner and Animal Husbandry Commissioner. It was soon announced

that Sir Bryce Burt would hold the post of Agricultural Commissioner, but the post of Animal Husbandry Commissioner presented a very different problem.

Olver was in India at the time, serving with the Army, and after taking advice he left for England, retired from the Army, and applied for the post of Animal Husbandry Commissioner, which had been referred to the Secretary of State for India, who was asked to make an appointment in London.

This was Olver's chance and in spite of strong competition, from both inside and outside the profession, he was selected for the post. This was undoubtedly one of the most momentous steps ever taken in connexion with the veterinary services in India, for it brought under the supervision of one man—a veterinarian—all the livestock work of the country and so settled, at least for the time being, a controversy, which had been in existence since the first British veterinary officer arrived in India, nearly 150 years previously. Incidentally it is to be noted that, due largely to Olver's groundwork, the same arrangement still holds good in India, 30 years after Olver's first appointment.

Olver did not take long to see that to obtain a real drive in livestock improvement a unified department was necessary and he commenced the formation of an organisation, which enabled his successors later to set up in most provinces in India, unified departments of animal husbandry and veterinary services, thus setting an example for other tropical countries, concerned with livestock improvement, to follow.

Olver was knighted in 1937 for his work on the civil side in India, and no honour was more richly deserved.

PERSONAL

Births

GRANT.—On August 21st, 1961, to Aileen, wife of Gregor Grant, B.V.M.S., M.R.C.V.S., 44 Lycett Road, York, a daughter.

HARDY.—On August 16th, 1961, to Margaret, wife of B. D. W. Hardy, B.V.SC., M.R.C.V.S., of Orchardway, Eastgate, Sleaford, Lincolnshire, a son, Nicholas John.

HAWKSLEY.—On August 11th, 1961, to Betty, wife of Michael B. Hawksley, B.SC., M.R.C.V.S., of 12131 West 69th Street, Shawnee, Kansas, U.S.A., a son, Dominic Vincent Paul; brother for Jane, Christopher and Karin.

NOORDIN KELING.—On August 23rd, 1961, to Anne Salmiah, wife of Mohamad Noordin Keling, G.V.SC., M.R.C.V.S., D.T.V.M. (EDIN.), of the Veterinary Department, Federation of Malaya, a daughter at Pengkalan Chepa, Kelantan, Malaya, a sister for Ahmed Ainuddin.

PORTEUS.—On August 28th, 1961, to Joyce, wife of A. J. Porteous, M.R.C.V.S., Tyrella, Woodside, Heyburn, Yorkshire, a daughter, Jacqueline Helen, sister for Sandy and Morag.

NEW LIGHT ON THE COW

We are indebted to a member for sending us the following essay, quoted verbatim, written by a small girl of 13.

The cow is a mammal. It has six sides, right, left, upper and below. At the back it has a tail on which hangs a brush. With this it sends the flies away so that they do not fall into the milk. The head is for the purpose of growing horns and so that the mouth can be somewhere, the mouth is to moo with, and the horns are to butt with. Under the cow hangs the milk, the milk comes there and there is never an end to the supply. How the cow does it I have not yet realised but it makes more and more. The cow has a fine sense of smell, you can smell it far away. This is the reason for the fresh air in the country. The man cow is called an ox. It is not a mammal. The cow does not eat much but what it does eat it eats twice, so that it gets enough. When it is hungry it moos and when it says nothing it is because its inside is all full up with grass.

ERRATUM

We are asked to state that the President's television interview on August 28th was with Mr. J. Balfour Johnston and not Mr. Balfour Jones as we had been informed and whose name was, therefore, published. Apologies are made to these gentlemen.

COMING EVENTS

September

3rd to 9th (Sun. to Sat.). 79th Annual Congress and Exhibitions of the British Veterinary Association at Oxford.

7th (Thurs.). ROYAL VETERINARY COLLEGE ASSOCIATION. Annual Dinner during the B.V.A. Congress at St. Edmund's Hall, Oxford.

GLASGOW VETERINARY SCHOOL ALUMNUS ASSOCIATION. Dinner at the Mitre Hotel, Oxford, 7 p.m.

ROYAL (DICK) SCHOOL OF VETERINARY STUDIES ALUMNUS ASSOCIATION. Annual General Meeting and Dinner in the Oxford Sports Club, 7.40 p.m.

V.V.B.F. LADIES' GUILD. Annual General Meeting in Rhodes House, Oxford, 10.30 a.m.

13th (Wed.). SOCIETY OF PRACTISING VETERINARY SURGEONS. Meeting at the Grosvenor Hotel, Chester, 8 p.m.

14th (Thurs.). SOUTH EASTERN VETERINARY ASSOCIATION. Meeting at the Royal Star Hotel, Maidstone, 7.15 p.m.

B.S.A.V.A. SUSSEX AREA. Meeting at 2 Robertson Road, Brighton, 7.30 p.m.

20th (Wed.). SOUTH WALES DIVISION. Meeting at the Castle Hotel, Brecon, 2.15 p.m.

27th (Wed.). LANCASHIRE VETERINARY ASSOCIATION. Joint Meeting with the North Wales Division at the Grosvenor Hotel, Chester, 2.30 p.m.

NORTH WALES DIVISION. See Lancashire Veterinary Association above.

October

11th (Wed.). B.S.A.V.A. KENT REGION. Meeting at the Great Danes Hotel, Ashford Road, Maidstone, Kent, 7.45 p.m.

17th (Tues.). MID-WEST VETERINARY ASSOCIATION. Supper-Dance in aid of the Victoria Veterinary Benevolent Fund at the Berkeley Café, Clifton, 9 p.m.

20th (Fri.). SOUTH WALES DIVISION. Annual Dinner Dance at the Dragon Hotel, Swansea.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the date on which disease has been confirmed, followed by the postal address and local authority.

Anthrax

August 28th, 1961. Messrs. E. M. Darby & Son, Marholm Farm, Marholm, Peterborough, Northants (Parish: Marholm). (Cattle.) SOKE OF PETERBOROUGH.

Fowl Pest

August 23rd, 1961. H. Bacon, 8, Simpson Place, Mexborough, Doncaster, Yorks. Disease at: Park Road Allotments, Mexborough, Doncaster, Yorks. YORK, WEST RIDING.

August 23rd, 1961. H. Bacon, 8, Simpson Place, Mexborough, Doncaster, Yorks. Disease at: Bencliffe Road Allotments, Mexborough, Doncaster, Yorks. YORK, WEST RIDING.

August 23rd, 1961. C. Goldsborough, 10, Regent Terrace, Mexborough, Doncaster, Yorks. Disease at: Park Road Allotments, Mexborough, Doncaster, Yorks. YORK, WEST RIDING.

August 23rd, 1961. J. E. Broomfield, The Nook, Barham, Ipswich, Suffolk. EAST SUFFOLK.

August 24th, 1961. P. J. Taylor, 20, Moor Lane, Staines, Middlesex. MIDDLESEX.

August 25th, 1961. A. H. Smith, 45, Wapshott Road, Staines, Middlesex. Disease at: Moor Lane, Staines, Middlesex. MIDDLESEX.

August 25th, 1961 T. E. Furman, Bilton Cottage, Oxhill, Warwick. WARWICKSHIRE.

August 27, 1961. G. V. Leith, Bungalow Farm, Attlebridge, Norwich, Norfolk, Nor. 57X. NORFOLK.

August 28th, 1961. T. Chambers, 10, Orchard Street, Mexborough, Doncaster, Yorks. Disease at Dolcliffe Allotments, Mexborough, Doncaster, Yorks. YORK, WEST RIDING.

August 28th, 1961. A. J. Harsden, 5, Burroughs Lane, Saffron Walden, Essex. Disease at: Raymont Farm, Peaselands Road, Saffron Walden, Essex. ESSEX.

August 28th, 1961. T. A. C. Heritage, Church Farm, Oxhill, Warwick. WARWICKSHIRE.

August 28th, 1961. Miss H. S. Valender, The Stores, Oxhill, Warwick. WARWICKSHIRE.

August 28th, 1961. Mrs. A. G. V. Simmonds, No. 1, Peacock Cottages, Oxhill, Warwick. WARWICKSHIRE.

August 28th, 1961. Mrs. A. Clifton, Paynes House, Oxhill, Warwick. WARWICKSHIRE.

August 28th, 1961. Mrs. F. I. Griffin, The Laurels, Oxhill, Warwick. WARWICKSHIRE.

Swine Fever

August 23rd, 1961. R. Taylor, Mayfield Farm, Lower Lane, Milnrow, Rochdale, Lancs. LANCASHIRE.

August 24th, 1961. A. K. Bardsley, Carlam Hill Farm, Wawne, Hull, Yorks. YORKS, EAST RIDING.

August 24th, 1961. W. G. Adolpho, Rose Cottage, North Weston, Portishead, Somerset. SOMERSET.

August 25th, 1961. T. Webster, High Garth Well, Bedale, Yorks. Disease at: Well Hall, Well, Bedale, Yorks. YORK, NORTH RIDING.

August 28th, 1961. T. Shacklady, Tyddyn-y-Craig, Llanelian, Colwyn Bay, Denbighs. DENBIGHSHIRE.

August 28th, 1961. J. S. Andrew, Dale Brook Farm, Eastmoor, Chesterfield, Derbys. DERBYSHIRE.

August 28th, 1961. Mrs. K. L. Wood, The Grange, Goostrey, Crewe, Cheshire. CHESHIRE.

August 28th, 1961. P. W. Cooper, Halls Farm, Osmington, Weymouth, Dorset. DORSET.

August 28th, 1961. E. G. Grazier, Poplars Farm, Sharpway Gate, Stoke Prior, Bromsgrove, Worcs. WORCESTERSHIRE.

August 28th, 1961. J. Harrison, North View Farm, Leverton Road, Retford, Notts. NOTTINGHAMSHIRE.

Letters to the Editor

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

A Veterinary Centre

Sir,—Since the announcement that the Royal College of Veterinary Surgeons has sold its premises in Red Lion Square and was looking for a new headquarters, there have been several letters in THE RECORD suggesting that the Royal College and the B.V.A. should acquire a common headquarters and thus create something of a Veterinary Centre.

This suggestion has been most carefully considered by the Officers of both bodies who are in agreement that any advantages which might accrue from such a procedure would be far outweighed by the disadvantages. The following are some of the factors considered:—

(1) The B.V.A. is a purely voluntary body whilst the Royal College is a statutory body, and both have entirely different functions. In addition, part of the functions of the Royal College are classed as charitable in a legal sense, and must be supplied with facilities for a library, muniments room, museum, etc. which require a substantial amount of accommodation as a separate entity from that of the College and, of course, the Association.

(2) It was generally felt that it would be impossible to make any saving on the staff of either body and there would be great difficulty in proportioning responsibility for any joint staff and also for overhead expenses in connexion with the building, i.e. services, rates, Schedule A, etc.

(3) It was agreed that the presence of the College and the Association in the same building, or address, would add to the confusion which often exists not only in the minds of the general public but amongst members of the profession also.

(4) It is established beyond question that the profession gains much by having two official organisations to speak for it from the aspects of their different functions. This position would be weakened if there were any thought that the College and the Association were one and the same body or two bodies so closely linked as to be indistinguishable.

(5) It is agreed that some form of commonroom to allow members of either Council to meet or to entertain selected visitors would be desirable, but any

attempt to maintain a headquarters in the centre of London which could be used by the profession generally as a restaurant and/or club, would be doomed to failure on financial grounds. This has been demonstrated by the experience of other professions with far greater memberships than our own.

Yours faithfully,
L. GUY ANDERSON.
President of the Royal College of Veterinary Surgeons
College House,
Wright's Lane,
Kensington, W.8.

S. JENNINGS.
President of the B.V.A.
7 Mansfield Street,
London, W.1.
August 29th, 1961.

Groundnut Toxicity

Sir,—With reference to our previous letters (Allcroft, Carnaghan, Sargeant & O'Kelly, 1961; Carnaghan & Sargeant, 1961), we have since examined samples of groundnut meals and decorticated nuts from a number of different countries. Toxicity was assessed by the method described by Sargeant, O'Kelly, Carnaghan and Allcroft (1961). The toxic factor has been found to be present in samples from the following additional countries: Nigeria, French West Africa and Gambia. In most cases the level of toxicity was between that of the very toxic Brazilian samples and the moderately toxic consignments from India. Some of the meals examined were associated with deaths in calves and sheep (Fincham, I. H., 1961, and Buxton, J. C., 1961. Personal communications). Toxicity in others was detected as a result of examining a selection of groundnuts and meals of known origin which prior to our examination were not suspect. A number of these selected samples were, however, found to be non-toxic.

Extracts prepared from decorticated nuts have been found to be toxic indicating that toxicity is not caused by expeller or solvent processing methods.

Had it not been for the marked toxicity of the Brazilian samples imported into this country in 1959 and 1960 and its association with high mortality in turkey poults, the toxicity of groundnuts might well have been undetected for some time. Indeed, the clinical and histological effects of toxic groundnut meals in cattle have been reported to be indistinguishable from those of ragwort poisoning (Loosmore & Markson, 1961) and therefore, the condition may have been diagnosed incorrectly in the past.

It is not intended to imply that all groundnuts and their meals from the countries referred to in this letter or in previous communications, are toxic. Although our results have demonstrated the presence of toxicity in groundnuts and meals from widely different geographical areas (and this may be of considerable economic importance), it should be emphasised that we have no information of the extent to which the crops from those countries may be affected since relatively few samples have been tested. Nevertheless, the detection of toxicity in samples from many of the major groundnut exporting countries indicates the necessity for testing all consignments before inclusion in rations for livestock.

Yours faithfully,
K. SARGEANT,
Tropical Products Institute,
London.
RUTH ALLCROFT, R. B. A. CARNAGHAN,
Central Veterinary Laboratory,
New Haw, Weybridge.
August 25th, 1961.

References

ALLCROFT, R., CARNAGHAN, R. B. A., SARGEANT, K., & O'KELLY, J. (1961). *Vet. Rec.* **73**. 428.
CARNAGHAN, R. B. A., & SARGEANT, K. (1961). *Ibid.* **73**. 726.
LOOSMORE, R. M., & MARKSON, L. M. (1961). *Ibid.* **73**. 813.
SARGEANT, K., O'KELLY, J., CARNAGHAN, R. B. A., & ALLCROFT, R. (1961). *Ibid.* In press.

Sir,—I have read with interest the letter on Brazilian groundnut meal poisoning by Messrs. Loosmore and Markson, and feel the following might add some information to be recorded when considering differential diagnosis.

On a farm in this practice there was an outbreak in one calf-house of a respiratory disease similar to that which had occurred the previous year, the calves being 3 to 9 weeks old. Response to treatment was as expected until several died for no apparent reason and with no outstanding symptoms.

At this stage calves of about 3 months in another box commenced to show symptoms typical of lead poisoning, and several died; this was confused by the fact that at this time I was dealing with confirmed lead poisoning on another farm in calves of the same age—the main problem was that there was no source of lead for the calves under discussion.

Diet was investigated at an early stage, and it was only when the second batch of calves started to die that the groundnut meal being fed from the age of 3 weeks was found to be Brazilian.

Several animals commenced symptoms within a few days of withholding the Brazilian groundnut meal, and 1 died. Strangely enough, 1 out of the last 3 responded to vitamin A therapy.

There were no further symptoms after 1 week from withholding the cause of the trouble.

The same consignment of groundnut meal had been fed to the dairy herd, but there were no symptoms whatever of any ill-effects.

Yours faithfully,
W. V. GRAY.
"Gorselands,"
West Chiltington Common,
Pulborough,
Sussex.
August 24th, 1961.

Compulsory Slaughter of Pigs

Sir,—In this new scheme for the slaughter of swine fever infected pigs the important economic aspect seems either to have been overlooked or ignored.

In our practice alone we have several large commercial feeders who regularly buy weaners both pri-

vately, and in the markets. The majority of these farmers have these pigs vaccinated as soon after purchase as possible.

During the past few years there have naturally been occasional outbreaks of swine fever in these herds, but in every case the disease has been limited to one or two pens, and the economy of the farm has not been disrupted. Nearly all of these big feeders have large contracts for swill, stale bread, or skim milk which they have to take swine fever or no.

Is it the intention of the authorities to slaughter vaccinated healthy pigs in these cases, and if so what is going to happen about these contracts? Even supposing that the farmer managed to surmount the pile of surplus swill or the pond of skim milk for 2 to 3 weeks he is still not in the clear because his original herd would consist of pigs of all ages whereas he would have to buy in weaners which would not consume a quarter of the food of a balanced herd.

This whole scheme seems to have been half-baked from the outset. An announcement was made in Parliament before, it seems, any details were considered. Since then we have been fed further driblets of information none of which give much help either to the farmer or to the veterinary surgeon.

Yours faithfully,
P. H. MERCER

117 Loughborough Road,
Leicester.
August 22nd, 1961.

Downing's "Instructions"

Sir,—Mr. Sherwin Hall's article on "Downing's Instructions for the Extracting of Calves" (*Vet. Rec.* **73**, 637) is a useful contribution to veterinary history, but it is unfortunate that, in giving credit to Downing, he largely discredits Skellett. He states that Skellett, in his invaluable *Early History of Veterinary Literature*, "records that Downing's work was purloined by both Skellett, who published a well-known book on the subject in 1807, and Simonds who taught at the London School from 1842 to 1881." This is a serious misrepresentation of the facts.

In commenting on Skellett's *Practical Treatise on the Parturition of the Cow*, Smith (Vol. III, p. 119) says "this is the most superb work ever published in the English language on parturition in the cow. The plates are on copper, those of the 1829 edition being hand-coloured, and measure 10 by 8 inches. . . . He was no ordinary man; he had studied comparative anatomy, and disagrees with Monro's account of the amnion; he injected the blood vessels of the uterus in order to trace the circulation in the placenta, and employed the best artistic talent of the day to represent normal and abnormal parturition. Modest, unassuming, cool in the presence of great difficulties, kind, humane and gentle in his methods, he stands out as one of the greatest veterinary obstetricians this country has produced. . . . Skellett may not have seen Downing's pamphlet on the subject, but on comparison there is a resemblance which suggests that he might have drawn on Downing. There was no necessity for this, as Skellett possessed a scientific interest in the subject which was entirely absent in the plain country practitioner of Stourbridge, and, further, he had abundant material of his own. We are inclined to think that the work of Downing stimulated Skellett to publication. . . . Skellett evidently had a love for science; he tells us that the ovum of the cow is the size of a pea eight days after coitus; on the ninth day it is the size of a pigeon's egg; on the fourteenth the size of a pullet's egg; and at twenty-one days is oval in shape and the size of a duck's egg. Connection between the uterine and foetal placentae is established on the fourteenth day, and at the twenty-first day the membranes begin to grow into the horns of the uterus, shooting out from the blunt end of the oval-shaped ovum; at the forty-second day they have reached the extremity of the horns. Then we see the truly scientific mind of this man: he injected the vessels of the uterus in order to see whether he could force the material into the vessels of the ovum, but failed; then he tried injecting from the side of the ovum, and found there was no passage into the uterine wall. He thereupon says that the human mind cannot explain how the uterine milk is converted by the ovum into blood. He tells us the calf 'quickens' at four to five months, and between the fifth and sixth month can generally be felt through the right flank. . . ."

"So far as we know, Skellett had no scientific training other than what he gave himself. He instinctively realised the points of physiological interest and set to work to give them precision; as he says, 'an accurate knowledge of the gravid womb is essential; in no subject in science is it more necessary.' It is in these respects that Skellett rises superior to Downing, who probably never made a dissection or any physiological observation. The hygienic treatment of the in-calf cow is laid down with great precision; he insists on fresh air and daily exercise. He attributes abortion to 'nauseous smells,' adding that it has been known to spread like an infectious disease, and accordingly prescribes immediate isolation. Then follows an account of normal and abnormal parturition; all the presentations are represented by means of plates, and in plain confident language we are taught how to rectify matters. . . . Skellett has broken new ground; a man has appeared who is in search of knowledge and has given precision to some aspects of obstetrical physiology through his own careful and numerous dissections. His work stands by itself. Its clinical side was plundered by Simonds without acknowledgment, but henceforth Skellett's name must live."

I have seen Skellett's book in the library of the Royal College of Veterinary Surgeons and it should be consulted by anyone interested in the subject. It would be a great contribution to veterinary science and history if someone, or some organisation, could sponsor the publication of a facsimile edition of this fine work.

Yours faithfully,
JOHN FRANCIS.

Department of Preventive Medicine,
Veterinary School,
University of Queensland,
St. Lucia, Brisbane.
August 22nd, 1961.

Displacement of the Bovine Abomasum

Sir,—We were particularly interested in the article by Pinsent, Neal and Ritchie on displacement of the abomasum of the cow since our records cover more than 70 animals and our conclusions regarding the most efficient surgical technique are similar to theirs —namely that the bilateral approach is the method of choice.

We agree that it is difficult to understand the apparent increase in the incidence of this condition which we believe to be real. There is no common factor which we have pinpointed as a possible causative factor. We have noted how frequently the condition recurs on the same farm. This may well indicate an environmental factor which we have not detected. Lines of breeding in pedigree herds have been excluded within the limits of the comparatively small numbers involved.

We have diagnosed this condition in cows up to mid-term which have not milked so well as expected and which were not carrying the condition comparable to other animals in the herd. We have waited until parturition has been successfully completed to carry out a planned operation to avoid the risk of abortion as a sequel of surgical interference during pregnancy. Special care has been taken to maintain condition, earlier drying off assisting that end.

As your authors point out cows can, and do, carry on with a displaced abomasum at a varying level below their real productive potential, having accommodated themselves to the condition. We have met adhesions in 7 cases, which have been successfully operated on, and spontaneous rupture of an extensively ulcerated abomasum with adhesions in one case—the organ rupturing directly the hand was placed on it to carry out a preliminary examination.

We consider the initial left flank approach essential in all cases; firstly to permit confirmation of diagnosis, secondly to allow an adequate examination to detect adhesions which are usually to the abdominal wall and are often extensive, and thirdly to provide conditions under which these adhesions can be safely broken down.

In any case of a cow giving a disappointing yield we consider it advisable to make a routine check for displacement whatever the relationship to pregnancy. Ketosis may be present in cases especially when diagnosed soon after parturition, due to the tendency of the cow to take less food and in consequence be in a stage of under-nourishment; but it is not necessarily clinical in all cases. In the grazing season, the presence of clinical ketosis is less common, particularly where the animal has developed a good tolerance to the displacement. In such cases a crisis will occur from time to time with clinical signs of displacement but these may well be overlooked under modern conditions of management. Tolerance under grazing conditions is much greater than on winter feed.

We have met the condition with certainty as a sequel of husk in milking cows on 3 occasions—the condition not being present before clinical signs of husk arose, auscultation revealing the condition in cows which made no real progress during convalescence.

All three were operated on and made spectacular recoveries to full production. We also had a series of six cases in one herd in the calving season following a herd outbreak of husk, but did not connect the two until the three cases quoted above occurred in another herd.

We have met one case in which the first sign of illness was a haemorrhagic enteritis—the haemorrhage being very profuse. On qualified recovery operation was carried out—when very extensive ulceration involving a large area of the abomasum was found with adhesions over a greatly thickened area. These were broken down, the organ replaced and the cow made a complete—though slow—recovery. This was a case in which acute colic was a sign and is one of two in which colic was recorded.

We have also met displacement in a cow as a sequel of the animal being wedged over a hedge—the abdomen taking the whole pressure of its weight for a considerable period of time until released.

We find careful and patient auscultation over a period of time the most certain diagnostic procedure —the area ausculated being on the line from the angle of the haunch to the shoulder between the last two or the last three ribs.

The "tinkling" sounds are very typical and often can be heard when ruminal contractions occur. In those cases where no sounds are heard, allowing the animal to starve of food and water for a few hours and then making it available ½ to 1 hour before examination is often helpful.

Care must be taken to listen for the typical high-pitched resonant sounds like water dropping from a height into a tin can. Gurgling sounds are usually intestinal in origin and are not infrequently heard in cases in which the bowels are relaxed or diarrhoeic. Diagnostic sounds may be heard at one visit and not at the next. This may be associated with the amount of gas or fluid in the abomasum and the presence or absence of ruminal or abomasal contractions.

We have given up "deflating" the abomasum during operation because of the high risk of peritonitis resulting from the escape *around* the actual needle and not through the rubber tube at the time of puncture, which can and does occur. The use of the hand and forearm in depressing the organ to the floor of the peritoneal cavity and the gradual escape of gas backwards and forwards requires care and patience but is effective, and once completed renders the subsequent procedure rapid and easy.

The right side incision should be made lower than the left for two reasons:—

(1) The position of the peri-renal fat and areolar tissues on the right side can make entry very difficult if the incision is made too high.

(2) The lower incision—3 inches below the transverse processes facilitates the handling of the abomasum by the second surgeon. When the organ is passed under the rumen, the operator on the left

side should try to pass the pyloric end rather than further forward to make it easier for his colleague to draw the abomasum to the right side incision for identification before suturing to the peritoneum in front of the incision. When passing it under the rumen the operator from the right side can pick up the abomasum between the open fingers of his colleague. The instructions we use are to hold the abomasum and then to take the strain as the surgeon from the left assists by pushing underneath the rumen. The surgeon on the right side finds it advantageous to pass his hand to the floor of the abdomen first of all forward and then downward over the wall of the abdominal cavity and then to slide it in the general direction where he expects his colleague's hand to be.

We gave up left flank only and paramedian approach for the reasons clearly stated in the article referred to, and "rolling" because of its uncertainty and its liability to be associated with recurrence after apparent successful replacement.

We have concluded that the association with parturition may well be incidental and that displacement may, and does, occur at other times although not diagnosed in the majority of cases until some association with parturition.

Yours faithfully,
G. N. GOULD.
A. C. GOULD.

12 Landguard Road,
Southampton.
August 23rd, 1961.

An Article in the Farming Press

Sir,—The "TV. Vet" is to be congratulated on bringing to the public's notice the acute pain, prolonged discomfort, loss of condition and reduced milk yield that we believe the dairy cow suffers when affected with infectious keratitis or New Forest disease (*Farmer and Stock-breeder*, August 15th, 1961, p. 77).

However, there are several points made in this article which suggest that the author has ignored the published evidence of well conducted work in this country as well as in Australia and the U.S.A. The various workers agree that infectious bovine keratitis is caused by *Moraxella bovis* alone and not (quote) "by a comparative large virus which we call a 'rickettsia.'" The "TV. Vet's" article continues with theories on transmission without mention of the possibility of flies acting as mechanical vectors or the reservoir of infection maintained by untreated "carrier animals."

As far as I am aware there is no published evidence the New Forest disease occurs in man or as stated in the article; "The virus of New Forest disease can and often does affect human beings." There are two bacteria somewhat related to *Moraxella bovis* which have been associated with certain eye conditions in man but their rôle in the pathogenesis is not fully understood.

As a profession, we are justifiably proud of our right to diagnose and treat animal disease. We are not trained or equipped to do the same for human beings and I suggest that phrases like: (I quote) "If I hadn't filled Joe's eye with the cow's ointment. . ." do little towards promoting co-operation with our medical brethren.

I understand that many veterinarians consult the British Veterinary Association when invited to make a public statement or address on a subject with which they are not completely familiar. With the amount of specialised knowledge now available, a speaker or writer is morally bound to consult a better-informed colleague or at least the most recently published literature, in order to prevent a serious error or omission. The responsibility for checking all his facts rests most particularly heavily on a veterinary author when he knows that his article may be read by many thousands of lay people. Veterinary colleagues can and do criticise statements, but this is possible only because of their comparable basic training.

It is the responsibilty of the veterinary profession and each veterinarian to ensure that the public are correctly informed. To this end the Royal College might be considered the guardian body responsible for the standard of communications and particularly those appearing in the farming press.

Yours faithfully,
B. S. COOPER.

Hill Farm House,
Thurgarton,
Nottingham.
August 22nd, 1961.

The Commercial Exhibition

The following notes have been supplied by the commercial houses whose stands have, for a number of years, formed a welcome and valuable adjunct to our Congress.

Allen & Hanburys Ltd.

The Allen & Hanburys' stand features Dictol—Lungworm (Oral) Vaccine—which provides active immunity to parasitis bronchitis in cattle. The vaccine is given to cattle over 2 months of age.

The vaccine is now in its third year of commercial production. Success in the field was amply demonstrated in 1959 when husk was a serious problem in unvaccinated herds in many parts of the country, especially North Wales, Cheshire, Lancashire and the Lake District, and again in 1960 when parasitic bronchitis was an even greater problem all over the country.

Production is based on seasonal demands and Dictol will again be available from January 1st, 1962, until the end of May, 1962. It is anticipated that special batches will be manufactured in the summer months to permit farmers to give a course of the vaccine to calves born too late for administration to be commenced by the end of May, 1962.

The Animal Health Trust

Although the Animal Health Trust is represented at the Congress by individual exhibits in the Scientific Section from each of its 4 Research Stations, it has also, this year, a stand in the Commercial Exhibition. For this it is indebted to Bayer Products Limited who, having reserved the site and later found themselves unable to use it, generously made over the space to the Trust.

The stand is accordingly being used to feature the Trust's services to the veterinary profession. These are (a) the Educational Grants by which the Trust helps to stimulate the flow of qualified manpower into the ranks of the profession, and (b) the advisory and consultative services which are available, through the Research Stations, to all practising veterinary surgeons.

Literature describing these and all other Trust activities will be found displayed on the stand, where a member of the Trust's staff will be present to answer questions.

Arnold & Sons Veterinary Instruments Ltd.

The exhibits will comprise the usual Arnold range of veterinary instruments and appliances, and the main feature will be an American type of calving instrument and also a cattle probang with a plastic tube in place of the leather.

Bailliere, Tindall & Cox Ltd.

Baillière, Tindall & Cox Ltd., Publishers and Booksellers, will again be displaying a large range of veterinary books covering all publishers, including the forthcoming new second edition of Garner's "Veterinary Toxicology," 35s., and the fifth edition of Wright's "Veterinary Anaesthesia," 37s. 6d. Two very popular titles will also be available: Blood & Henderson, "Veterinary Medicine," 84s., and the new fifth edition of Anthony & Lewis, "Diseases of the Pig," 35s.

Boots Pure Drug Company Limited

Boots, the largest manufacturers and suppliers of drug galenicals and dressings, will be showing on their stand some of the extensive range available through their representatives and branches. All Boots galenicals and dressings are of British manufacture, and natural and botanical drugs are of Empire origin where obtainable. All official preparations are guaranteed to comply with the requirements of the British Pharmacopoeia or British Veterinary Codex. A selection of the many corticosteroid and antibiotics made by the Company will also be on display together with many well-known medical products.

Particular emphasis will also be given to the method designed to enable stock investment in veterinary practices to be kept to a minimum. A stock book has been specially designed and provided to help veterinary surgeons with the ordering of their requirements and to prevent under- or over-stocking. It is simple and efficient, and allows full advantage to be taken of the "one transaction" system. Boots service to "The Prescribing Veterinarian" will also be fully featured. With 1,300 branches and more than 1,800 qualified pharmacists Boots can offer first-class service to all veterinary surgeons.

Brookwick, Ward & Co. Ltd.

On the Hauptner stand at the Oxford Congress the small light-duty electro-cautery, first shown in 1960, will again be exhibited. This instrument is fast proving to be an essential item of equipment in the veterinary surgery. Other instruments on show will include the Hauptner Ferroscope (a transistorised metal detector), the Hauptner Munich rectoscopic set, and the Hauptner rhinolaryngoscope. The exhibit will be built round the movable cabinet/instrument trolley No. 4732, and in addition it is hoped that there will be sufficient space to show a small movable instrument table. Owing to the lack of space, fewer instruments than usual will be on show. However, English translations, with illustrations, on the use of the more specialised Hauptner instruments will be available.

Burroughs Wellcome & Co. (The Wellcome Foundation Ltd.)

The complete range of Wellcome veterinary products is displayed on the B. W. & Co. stand.

This display, falling naturally into biological and pharmaceutical divisions, illustrates the assistance given to every field of veterinary medicine.

Many of the products in this range have resulted from original research carried out in the Wellcome Laboratories and all are prepared with constant regard to the highest standards of efficiency and safety.

Among recent additions to the Wellcome range are two vaccines for use in mink—Epivax for distemper in mink and Exovax for protection against botulism. Carovax brand pasteurella vaccine and Wellcome brand pasteurella antiserum provide cover against *Pasteurella septica* types II, III, IV and *Pasteurella haemolytica*, for the prevention and treatment of septicaemia in young lambs and pneumonia in older sheep. Wellcome Improved Tetanus Toxoid (A.T.) provides a highly antigenic, stable toxoid, in a 2-c.c. dose.

CIBA Laboratories Ltd.

Among the products featured on the CIBA stand will be Socatyl paste, an effective and economical treatment for scour, which is well tolerated in pigs of all ages. The CIBA stand will also display a new lotion of Vioform-Hydrocortisone. Vioform has both antibacterial and antifungal actions which form a powerful combination with the anti-inflammatory and antipruritic properties of hydrocortisone in a wide range of dermatoses. The lotion is supplied in a dispensing pack containing 1 dozen bottles. The bottle has an elongated nozzle which simplifies application in otitis externa. A salve is also available in 5-g. tubes. Vecortenol (prednisolone trimethylacetate) is the corticosteroid with the longest action. Because the effect of each dose is prolonged, the need for return visits is minimised. The new pack contains 100 mg. of Vecortenol in 10 ml. Also available are 4-ml. and 10-ml. vials containing 25 mg. per ml. Vetidrex, the first potent injectable diuretic available in veterinary practice, is effective in most types of oedema in large and small animals. Tablets are also available for maintenance therapy and for small-animal practice. Socatyl, Vioform, Vecortenol and Vetidrex are products of CIBA research.

Cooper, McDougall & Robertson Ltd.

The Cooper stand will feature 2 new anthelmintics, Coopex and Coopaphene.

Coopex formulated with Coroxon is an entirely new liquid worm drench for the control of the most important stomach and intestinal worms in sheep, and represents a most significant advance in worm control. The principal advantages of Coopex are:—

(a) High Efficiency: Coopex retains the well-established effect of phenothiazine against pathogenic worms of the abomasum (especially Haemonchus) and large bowel, and is much more efficient against *Trichostrongylus* spp., adult Nematodirus and Strongyloides in the small intestine.

(b) Small Dose: The recommended doses are in the range 200 to 300 mg. per kg.

(c) Low Cost.

Coopex is available in 1-gallon polythene containers, sufficient to treat 640 lambs or 210 adult sheep.

Coopaphene. A ready to use drench for the effective treatment of chronic fascioliasis in sheep and cattle.

Coopaphene may be used on all classes of stock and provides a safe and highly efficient treatment at all seasons of the year. It may be used on pregnant ewes and lactating cows and will not taint milk or meat. There is also no necessity to withdraw concentrates before and after dosing.

Coopaphene is available in a 40-oz. bottle sufficient to treat 80 sheep or 20 calves.

A full range of other Cooper Veterinary products together with those of Cyanamid (Great Britain) Ltd. and Merck Sharp & Dohme Ltd. will also be on display.

Cyanamid of Great Britain Ltd.

"At Work with Aureomycin Chlortetracycline" has for some months been the caption of Cyanamid advertisements in THE VETERINARY RECORD. It has become an everyday phrase with veterinary surgeons. This then will be our theme for the B.V.A. Congress of 1961:—

The small-animal practitioner with a wide variety of Cyanamid veterinary products at his disposal—Aureomycin 50- or 250-mg. capsules are his stand-by.

The veterinary surgeon treating a cow with mastitis—staph or strep? He is using Aureomycin Mastitis Suspension.

The poultry house where all is not well. Stress? Aureomycin Soluble Tinted is being advised.

The cow-shed and a case of metritis. The hot water, the soap and towel, and Aureomycin Soluble Oblets.

That late call where it is almost too late. An acute bacterial infection? Achromycin Intramuscular Injection is the answer in this case.

"New Forest eye" again. Aureomycin Puffer or Aureomycin Ophthalmic Ointment is needed.

Calf scour is always a problem. Aureomycin Soluble Tinted is the product the veterinary surgeon is advising here.

We shall also display our veterinary range of Aureomycin and Achromycin preparations, both the well-established and the new.

Our veterinary representatives will be available at the stand to meet and greet veterinary surgeons attending the Congress.

The Distillers Company (Biochemicals) Limited

Of the products featured on the DC(B)L stand, the most recently introduced, Zynotracin ointment, takes top place. It contains Xanthocillin, a potent and non-toxic wide-spectrum antibiotic which, in combination with zinc bacitracin and hydrocortisone is effective against most bacteria likely to be present in skin infections.

Economy packs of the ready-prepared antibiotic preparations are given prominence.

Distavone Suspension, which is in fact the first British ready-prepared suspension of procaine penicillin and dihydrostreptomycin, is featured in vials of 25 ml. and 75 ml. There is also Distaquaine Suspension, the ready-prepared injection of procaine penicillin in vials of 10 ml., 30 ml. and 90 ml. This product is used extensively for Gram-positive infections. For Gram-negative infections there is Mixtamycin Solution, the ready-prepared injection of streptomycin and dihydrostreptomycin in vials of 30 ml. and 90 ml. Solupen Crystalline Penicillin, which is buffered to give a longer period during which the aqueous solution will retain its potency, is displayed in vials of 1.0 mμ, 5.0 mμ and 10 mμ. For treatment of all forms of bacterial enteritis there is Streptaquaine Sulpha, a ready-prepared suspension containing dihydrostreptomycin, sulphadimidine, kaolin and pectin. This product is widely accepted as a convenient therapy for bacterial enteritis. Distivit Injection of vitamin B_{12} which is of value in all aspects of convalescence or debility in animals, completes the interesting range of products presented by The Distillers Company (Biochemicals) Limited.

Evans Medical Ltd.

Prominent among the selection of veterinary products displayed on the stand of Evans Medical Ltd. will be Carboloma and Nobecutane.

Carboloma is an intramuscular injection for the treatment of fasciolíasis in cattle and sheep. This formation ensures controlled absorption of the active ingredient, carbon tetrachloride, from a muscle depot, and allows a comparatively large dose of carbon tetrachloride to be administered with a minimum of discomfort and systemic reaction. Efficacy, safety and ease of administration combine to make this the product of choice in cases of liver fluke infestation. Carboloma is presented in bottles of 500 ml. with tear-off dispensing labels.

Nobecutane is a transparent plastic dressing presented in a spray pack. It is impervious to bacteria but permeable to air and water vapour and does not impair skin respiration. Nobecutane is ideal as a surgical and general wound dressing, for the protection of plaster casts and for retaining bandages on difficult sites. Being of high tensile strength Nobecutane does not restrict movement and can therefore be applied over joints where some degree of mobility is required.

W. Gimber & Sons Ltd.

W. Gimber & Sons Ltd. (stand 29) will again be exhibiting a full range of instruments, equipment, sundries and a number of pharmaceuticals.

Amongst many items of special interest will be a small-animal operating table with irrigation stand and Mayo table complete, the Jennings circle absorber anaesthetic apparatus for large animals, general purpose operating lamp, complete range of protective clothing and a new type of electric de-horner.

With regard to pharmaceuticals we shall be showing products marketed by Armour Pharmaceutical Company Ltd., including their Chorionic Gonadotrophin B.P. (Luteinising Hormone) which has already established itself as a product of high quality. Special reference will be paid to Ceruvet ear wax remover and Ornimed the new medicated bird seed, both of particular interest to the small-animal practitioner.

We shall also display a comprehensive list of the manufacturers for whom we are pleased to be distributors, and it is hoped that this will emphasise to the veterinary surgeon in general practice the complete service that the company can now offer.

Glaxo Laboratories Ltd.

To effectively portray an extending and already extensive range of Glaxo products, this year the Glaxo stand comprises 5 exhibits in one. Each day the back panel and front unit will be changed. Products covered include cerates, Canilep, Vitablend, Corticosteroids and Sheep Vaccines, descriptive notes on which are given below:—

Mylipen, Streptopen and Biotexin, the Glaxo cerates provide attack in depth against mastitis.

Canilep is the first British quadrivalent dog vaccine. With a primary course of 2 injections it can immunise a dog against distemper, virus hepatitis and 2 forms of leptospirosis. Added feature with this new vaccine is a booster pack for distemper.

Vitablend is the Glaxo name for a wide range of scientifically formulated vitamin-mineral and antibiotic supplements. The active ingredients are precisely stabilised and controlled for full activity.

British made from start to finish, Glaxo corticosteroids provide products for all types of therapy, topical, local and systemic.

Leader in the Glaxo sheep vaccine range is Ovilin, first ever vaccine to give 4 disease protection against pulpy kidney, tetanus, blackleg and braxy.

Because of the considerable amount of time being devoted at the Congress to discussion of animal feeding, a large part of the Glaxo stand features animal feed supplements for all classes of stock.

If you do not already have one, ask at the Glaxo stand for the new veterinary products list.

C. J. Hewlett & Son (Veterinary Division of Astra-Hewlett Limited)

Plastics, already well to the forefront in industrial development, play a major part on Hewlett's stand this year. As a result of extensive investigational work the Company introduce a new plastic pack for their well-established and ever-popular range of Milk Fever Injections.

One of the main advantages of this latest development is that each pack will be presented as a completely sterile unit, sealed and ready for use with its own individual giving set. Other advantages are that the unit is disposable, unbreakable and much lighter than the existing bottles.

The company will continue to market its injections in bottles alongside the new plastic units, until this new presentation supersedes the former as the accepted pack. It is anticipated that the development of these new packs will be extended to include products quite apart from the calcium range.

Among the other products on show are two of the Company's leading specialities, Xylocaine and Alboven.

Xylocaine, now being manufactured at Watford, is the original Lignocaine local anaesthetic developed in Sweden by AB Astra, the parent company. This product is now generally accepted by the veterinary, medical and dental professions as being the preparation of choice for local anaesthetics.

Alboven, the blood volume expander, has steadily increased in popularity since its introduction at Folkestone two years ago, and is now recognised as the most advanced method of treatment for shock in small animals.

Nebacetin, the only antibiotic teat cannula, is prominently displayed in all 3 sizes.

Organon Veterinary Hormones and Ward Blenkinsop Veterinary Products, 2 well-known ranges for which Hewletts are sole distributors, are represented by some of their most popular products.

Imperial Chemical Industries Ltd. (Pharmaceuticals Division)

This year Imperial Chemical Industries Limited, Pharmaceuticals Division, give pride of place to Promintic, a new anthelmintic with a unique mode of action and high activity against the *whole range* of intestinal nematodes affecting sheep and cattle. Given by subcutaneous injection, Promintic is outstandingly effective against *all stages* of worm species and brings about a rapid clinical improvement. It is safe even in animals of poor condition and does not stain fleece or discolour milk. Other anthelmintics displayed are Phenovis, fine, high-purity phenothiazine, available as a powder or ready-to-use drench, and Dictycide subcutaneous injection for parasitic bronchitis.

Amongst the other products featured are Fluothane—the non-explosive inhalation anaesthetic now being used extensively in veterinary, as well as medical, practice; Mysoline—a reliable anticonvulsant; Fulcin—an oral treatment for all types of of ringworm infection; and Anapolon—a new synthetic anabolic agent.

Several antibacterials are exhibited, including the well-known Sulphamezathine—still the best and safest sulphonamide; Stromez—a balanced mixture of Sulphamezathine, streptomycin and kaolin for calf scour and enteritis; and the ever-popular Avloprocil A.S.—procaine penicillin ready for injection.

Various formulations of the outstanding I.C.I. antibacterial Hibitane are also on display, including a special combination with Cetavlon—*Savlon Hospital Concentrate*—which is ideal as a general purpose antiseptic in veterinary practice.

International Serum Co. Ltd.

The International Serum Co. Ltd. introduce a new range of products of Phylaxia, Budapest, including Crystal Violet Vaccine and Swine Fever Antiserum.

Other items of interest will be the veterinary specialities of Farbenfabriken Bayer A.G., Leverkusen. These include Apocrine A, which is a preparation of Pregnant Mares' Serum in oil; Coforta, an injectable phosphorous compound for stimulating metabolism; Bilevon for oral administration in the treatment of liver fluke in sheep and cattle.

In addition to the above is the usual range of vaccines and sera.

May & Baker Ltd.

The exhibit of Pharmaceutical Specialities (May & Baker) Ltd., will reflect the research background to the Company's activities in the veterinary field, which have recently been directed towards the development of new trypanocidal and babesicidal agents and improved phenothiazine derivatives for use in animals.

Additions recently made to the Company's extensive list of veterinary products include Rovamycin brand spiramycin intramammary injection for the treatment of resistant mastitis; Vallergan brand trimeprazine tartrate, a phenothiazine derivative which may alternatively be applied as a sedative or as an antihistaminic; and Flaxedil brand galamine injection, a competitive neuromuscular blocking agent for use as an adjuvant to general anaesthesia in certain types of surgery.

A representative range of older products will also be shown including the well-known group of M. & B. veterinary sulphonamides.

Minsal Limited

Minsal Ltd. (manufacturers of mineral supplements for all farm stock) cordially invite members of the veterinary profession to the Minsal stand where technical staff will be available to discuss matters of interest.

Parke, Davis & Company

The Parke, Davis stand at the 1961 British Veterinary Association's Congress illustrates current products in the range of Chloromycetin preparations developed for use in animal medicine.

Systemic Chloromycetin Preparations. As an injectable form of Chloromycetin presented ready for use without pre-mixing, Intramycetin has proved of special interest to the large-animal practitioner. In vials of 30 ml. or the smaller 10-ml. size, Intramycetin (a 15 per cent. aqueous suspension of chloramphenicol) provides a truly portable and practicable form of antibiotic therapy for a wide spectrum of animal infections.

Chloromycetin Vetrettes each contain 500 mg. chloramphenicol and are designed for oral treatment as a drench in calf scours and other enteric infections. They may also be used as a pessary following parturition, removal of retained membranes, etc., and in cases of metritis. A number of workers have drawn attention to the appearance of calf scours due to antibiotic-resistant strains of *Bact. coli* which are still sensitive to Chloromycetin. The use of Chloromycetin in this condition is therefore specially indicated.

Topical Chloromycetin Preparations. The Aerosol pack of Chloromycetin Tincture 10 per cent. has become the standard treatment for contagious foot-rot in sheep. Application is quick and economical of material; response rate is very high and relapse rate extremely low, thus keeping weight losses and treatment costs down to a minimum.

Chloromycetin Tincture Aerosol (colourless) is a penetrating antiseptic spray dressing providing a very convenient form of treatment for surface wounds and other superficial infections.

The efficiency of locally-applied Chloromycetin in the treatment of infectious keratitis is well known, and in this respect Chloromycetin Ophthalmic Ointment will prove of special interest to the large-animal practitioner.

Petfoods Limited

The theme of the Petfoods Limited stand illustrates the very considerable growth which has taken place since 1953 in the consumption of prepared foods for pets. Their wide range of products for dogs (Chappie, Chum, Lassie and Pal), cats (Kit-E-Kat, Minx, Whiskas) and birds (Trill, Swoop) will be featured.

Petfoods continued development in this field will be illustrated by the display of new products: Dine for cats, Frolic and Buster for dogs, which are undergoing market evaluation.

Pfizer Ltd.

The Pfizer stand at the B.V.A. Congress will be largely devoted to the recently marketed range of biologicals, chemotherapeutics and other drugs. As the theme of the Congress is to be "Preventive Medicine," the greatest emphasis will be placed on the biological products.

These biologicals are largely concerned with the prevention and control of sheep diseases and a comprehensive range of vaccines and antisera is offered for use against diseases such as black disease, blackleg, pulpy kidney, lamb dysentery, enterotoxaemia and tetanus. As well as those for use in sheep are products for use in cases of swine erysipelas, white scour, and scours due to *E. coli* infection.

Besides biologicals, a range of chemotherapeutic and other products will be exhibited for use in a wide variety of conditions. This range will include the list of Terramycin and corticosteroid products already well known to veterinary surgeons.

Reckitt & Sons Ltd.

Reckitt & Sons Limited present on stand No. 20 their well-known range of Dettol preparations including Dettol, Dettol Antiseptic Cream, which is now available in a convenient refillable squeeze bottle, and surgical Dettol. Also exhibited are Disprin, Codis and Cafdis, the analgesic tablets providing soluble aspirin in a stable form.

Dettol. Dettol is particularly suitable for general veterinary use, because, in addition to being an efficient bactericide with a wide range of action, it is well tolerated on the skin and tissues, and is an excellent deodorant. It is also non-poisonous and non-staining. Dettol has been approved as a disinfectant for the purpose of the Diseases of Animals Act.

Dettol Antiseptic Cream. An improved antiseptic hand cream containing the main active ingredients of Dettol together with essential fats to replace those lost by normal washing with soap and water. It has a rapid action against a wide range of pathogenic micro-organisms with a persistence of effect. It is a useful antiseptic lubricant in parturition.

Instrument Dettol. For instrument disinfection, forming a clear solution in soft or distilled water. Rapidly bactericidal against a wide range of pathogenic micro-organisms.

Surgical Dettol. (Blue, Orange and Colourless) is intended for pre-operative skin disinfection. It is rapidly bactericidal, virtual disinfection of the skin being achieved within one minute.

Disprin forms calcium acetylsalicylate in water. Disprin should be given as a draught, whenever aspirin is indicated. As it is soluble it is less likely to cause irritation of the gastric mucosa.

Codis. A tablet providing soluble aspirin together with codeine phosphate and phenacetin. The tablet disperses rapidly in water and is indicated in all those conditions for which Tab. Codeine Co. would normally be prescribed, with the added advantage of better toleration and rapid absorption.

Cafdis is an improvement on the A.P.C. formula in that it contains soluble aspirin, so that when a tablet is placed in water a solution of aspirin and caffeine, in which the phenacetin is finely suspended, is almost immediately formed. This ensures improved tolerance and more rapid absorption than with standard A.P.C. formulations.

Smith, Kline & French Laboratories Ltd.

Smith Kline & French Laboratories Ltd. will be exhibiting on stand No. 5, with the display focused on Bifuran which is proving so successful in the treatment of pig enteritis. The Company have sponsored and arranged at Congress the international discussion on pig diseases between a B.V.A. team in Oxford and a Danish team in Copenhagen. This is the second successive year that S. K. & F. have made a major contribution to the Congress programme; last year they provided colour television.

Bifuran contains nitrofurazone and furazolidone, 2 well-known nitrofuran compounds which together have a very broad antimicrobial activity that is particularly effective against the pathogens usually involved in pig scour. Bifuran is supplied as a supplement for mixing in feeds, and in soluble tablet form for medicating drinking water or individual administration. Both preparations are also indicated for coccidiosis in poultry.

Several other common poultry diseases are effectively treated with a second nitrofuran preparation, Neftin, which is also shown on the stand. Neftin, a furazolidone premix for mixing in feeds, is extensively used for a wide-range disease control in poultry, particularly for those diseases caused by salmonellae, *E. coli*, and protozoan parasites.

The Universities Federation for Animal Welfare (UFAW)

This organisation and its activities are already familiar to many members of the British Veterinary Association. UFAW is a scientific society whose object is to promote the humane treatment of wild and domestic animals in this country and abroad. In its work UFAW enjoys the co-operation and advice of many veterinary surgeons and its present exhibit is designed to show those of its publications and scientific papers which will be of interest to members of the veterinary profession.

The Veterinary Section of UFAW, whose President is Mr. Sydney Jennings, was formed in 1951 and includes all those members of UFAW who are veterinary surgeons or veterinary students. Its objects are to advise UFAW on veterinary aspects of the welfare of animals, to represent to UFAW the veterinary profession's attitude to animal welfare problems and to bring UFAW's interests before the veterinary profession. All members of the profession are cordially invited to attend the Annual General Meeting of the Section on Sunday, September 17th, 1961, at 2 p.m. at Penscot Conference House, Shipham, near Bristol, when Sir Thomas Dalling will speak on "Veterinary activities in the developing countries."

UFAW is indebted to the British Veterinary Association and its Exhibitors for this opportunity to take part in the Commercial Exhibition, for which it is very grateful.

Willows Francis Limited

The accent this year in Willows exhibit will be on the recently introduced products to their large- and small-animal range:—

(1) Dicarocide (brand) of Diethylcarbamazine Citrate Injection—a modern drug which proved most efficacious in the treatment of parasitic bronchitis under stringent clinical trials.

(2) Willows new plastic teat dilator—scientifically designed to secure optimum retention and medication in the teat canal; recharged without removal from the teat.

(3) Corticosteroids including Prednivet Brand of Prednisolone in injection and tablet form and ACTH (Willows) a long-acting corticotrophin of high potency.

An illuminated panel will detail:

(1) Auroid—a new ear drop formulation of antibiotics, with a bactericide, parasiticide and anaesthetic presented in a squeeze-type polythene dropper.

(2) Sebumol—in a like presentation, is a cerumenolytic agent of high efficiency free from toxic, allergic or anaphylactic reaction: the ideal complement to all aural therapy.

A complementary panel will feature the well-established Willows products:—

(1) Neo-sulphentrin—clinically established as a rational economic and most effective therapy for infectious enteritis, diarrhoeas and all gut infections in all species.

(2) Xylotox veterinary, the renowned self-sterilising local anaesthetic.

(3) Neovagon pessaries for uterine hygiene, retained placenta, dystocia pyometra, subacute and chronic metritis.

Finally a panel will show sole distribution agencies for the veterinary products of (a) Geigy Pharmaceutical Co., *e.g.* Butazolidin, Eurax, Steroxin, and (b) biologicals of the internationally famous research organisation—Connaught Laboratories, University of Toronto, Canada, *i.e.* the canine vaccines Disvax, Dovax, Heprovax, and the exclusive mink vaccines Muvax, Estervax, Enbovax and Butovax.

A selected range of veterinary instruments also on view will include the Atlas Nylon Syringe, the Oster Dog Clipper, the Pifco Headlite and the new Swann-Morton blade and lifter.

John Wyeth & Brother Limited

Two preparations are featured on the Wyeth stand this years—Penidural Fortified Injection and Sparine.

Penidural Fortified Injection, a combination of Benzathine Penicillin B.P. and Procaine Penicillin B.P., is the only preparation of its kind that provides a full week's therapeutic penicillin blood level from 1 intramuscular injection. The procaine penicillin component provides the immediate, high blood levels required to check the disease in its acute phase during the first 12 to 24 hours: the benzathine penicillin (Penidural) adds the longer-lasting levels so necessary to aid recovery, reduce complications and to minimise the possibility of relapses, reinfection and spread of the infections. Penidural Fortified offers a one-dose treatment of diseases such as pneumonia, erysipelas, shipping fever, abscesses, etc., and is supplied in 10-ml. and 50-ml. multi-dose vials. Further information together with standard prices and special "bulk terms" will be supplied on request.

Sparine brand of promazine hydrochloride is noted especially for its remarkable freedom from toxic side-effects in providing control and sedation for both large and small animals. Well tolerated by oral or parenteral administration, Sparine also potentiates the effects of hypnotics and anaesthetics and is available in 3 forms. As tablets in 25 mg., 50 mg. and 100 mg., bottles of 50 and 250; as suspension in bottles of 115 ml. and 1 litre and for injection in boxes of 10 × 2 ml. (100 mg. per ml.) ampoules and 10-ml. and 30-ml. multi-dose vials (50 mg. per ml.). Details of prices and special "bulk" terms available on request.